NOVELL®

NetWare® Async Remote Router Administration Guide

NetWare®

NOVELL®

NetWare®

Async Remote Router Administration Guide

NetWare®

DISCLAIMER

Novell, Inc. makes no representations or warranties with respect to the contents or use of this manual, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc. makes no representations or warranties with respect to any NetWare software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to make changes to any and all parts of NetWare software, at any time, without any obligation to notify any person or entity of such changes.

FCC WARNING

Computing devices and peripherals manufactured by Novell generate, use, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. Such equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against radio interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user-at his own expense-will be required to take whatever measures may be required to correct the interference.

Some components may not have been manufactured by Novell, Inc. If not, Novell has been advised by the manufacturer that the component has been tested and complies with the Class A computing device limits as described above.

Copyright 1991 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell Inc.
Communications Products Division
890 Ross Drive
Sunnyvale, California 94089
U.S.A.

Technical Support: 800-221-6402
TELEX: 408-745-6533
FAX: 408-747-0631

NetWare Async Remote Router Administration Guide
2nd Edition (March 1991)
Novell Part Number 100-000690-002

DCR ... 91

12697

TABLE OF CONTENTS

HOW TO USE THIS GUIDE

HOW TO USE THIS GUIDE vii
ORGANIZATION vii
CONVENTIONS USED viii

CHAPTER 1 ABOUT NETWARE ASYNC REMOTE ROUTER

INTRODUCTION 1-1
CAPABILITIES 1-1
SOFTWARE REQUIRED 1-3
HARDWARE REQUIRED 1-4
KNOWLEDGE REQUIRED 1-4
OVERVIEW OF ROUTER INSTALLATION AND OPERATION 1-5

CHAPTER 2 GENERATING THE ROUTER SOFTWARE

INTRODUCTION 2-1
Installing the Netware Async Remote Router (LAN_DRV_190) Diskette(S) 2-1
GENERATING THE EXTERNAL ROUTER SOFTWARE 2-3
GENERATING THE INTERNAL ROUTER SOFTWARE 2-5

CHAPTER 3 CONFIGURING THE ROUTER SOFTWARE

INTRODUCTION 3-1
STARTING ACONFIG FOR AN EXTERNAL ROUTER 3-2
Floppy Disk Method 3-2
Floppy drive 3-2
Hard Disk or Network Drive Method 3-3
STARTING ACONFIG FOR AN INTERNAL ROUTER 3-3
CONFIGURING THE ROUTER USING ACONFIG 3-4
Main Menu 3-4
Naming the Router and Setting Access Privileges 3-6

Number of Lines 3-6
LAN Driver 3-7
Name of Router Server 3-7
ID String 3-7
Router Password 3-8
Selecting the Line to Configure 3-8
Configuring a Particular Line 3-10
Line Number 3-10
Line Enabled 3-11
Flow Control Enabled 3-12
Data Rate 3-12
Modem Type 3-14
Phone Type 3-15
Modem Initialization String 3-16
Dial String Prefix 3-17
Phone Number 3-17
Auto Connect 3-17
Auto ID String 3-18
Life Class 3-19
Idle Time-Out 3-20
SAVING YOUR CONFIGURATION SELECTIONS 3-22

CHAPTER 4 INSTALLING THE WNIM ADAPTER

INTRODUCTION 4-1
INSTALLATION PROCEDURE 4-1

CHAPTER 5 INSTALLING AND OPERATING THE ROUTER

INTRODUCTION 5-1
INSTALLING AND RUNNING THE ROUTER SOFTWARE 5-1
Copying the Software onto the Router 5-1
Using INSTALL to Install the Software 5-1
USING LCONSOLE 5-2
Starting LCONSOLE 5-3
LCONSOLE Help Screens 5-6
Viewing the Current Status 5-8
Line Number 5-9

Modem Type 5-9
Dial Mode 5-9
Line State 5-9
Other Side ID 5-10
Default (Connected) Baud Rate 5-10
"Auto Connect" item 5-10
Life Class 5-11
The Dialing Directory 5-11
Adding a Router Entry to the Dialing Directory 5-13
Dialee ID 5-14
Other Side ID String 5-14
Dial String, Life Class, and Idle Time-Out 5-14
Deleting a Router Entry from the Dialing Directory 5-15
Changing Router Settings in the Dialing Directory 5-16
Establishing a Connection to a Router Not in the Dialing Directory 5-17
Line Number 5-18
Router Password 5-18
Other Side ID String, Dial String, Life Class, and Idle Time-Out 5-18
Establishing a Connection to a Router in the Dialing Directory 5-18
Terminating a Connection 5-19
Line Number 5-20
Router Password 5-20
Resetting the Modem 5-21
EXITING LCONSOLE 5-22

APPENDIX A TROUBLESHOOTING

APPENDIX B ERROR MESSAGES

INDEX

Trademarks

IBM PC-DOS is a registered trademark of International Business Machines Corporation.

IBM PC, IBM XT, and IBM AT are registered trademarks of International Business Machines Corporation.

NetWare is a registered trademark of Novell, Inc.

Novell is a registered trademark of Novell, Inc.

HOW TO USE THIS GUIDE

HOW TO USE THIS GUIDE

This manual describes the process of installing and operating NetWare Async Remote Router. You will need to repeat the procedures in this manual for each router you create. A LAN-to-LAN connection needs two or more routers, one at each end of the connection.

ORGANIZATION

This guide is organized as follows:

- **Chapter 1 - About NetWare Async Remote Router**

  Describes NetWare Async Remote Router, and gives an overview of the installation and operation process.

- **Chapter 2 - Generating the Router Software**

  Describes how to install the NetWare Async Remote Router diskette(s), and how to generate the router software.

- **Chapter 3 - Configuring the Router Software**

  Describes how to configure a router using ACONFIG.

- **Chapter 4 - Installing the WNIM adapter**

  Describes installation and switch settings for the WNIM adapter.

- **Chapter 5 - Installing and Operating the Router**

  Describes how to install the router software, and run the router operator console using LCONSOLE.

- **Appendix A - Troubleshooting**

  Describes some common problems and their diagnosis.

- **Appendix B - Error Messages**

  Describes error messages that might display and their diagnosis.

CONVENTIONS USED

The following conventions are used in this manual:

- **boldface**

  Characters on a command line that you must type, including fixed parameters. For example, "enter **ACONFIG ROUTER.EXE**."

- *italics*

  Names of documents. For example, *"the WNIM+ Adapter Installation Guide."*

  Variable parameters on a command line that you must type. For example, "enter **ACONFIG** *filename*."

- quotes (" ")

  Configuration items you select. For example, 'select the "Life Class" item'.

- UPPERCASE

  DOS directory and subdirectory names. For example, "the ROUTEGEN-2 subdirectory."

  Software program names. For example, "the LCONSOLE utility."

- SMALL CAPITAL LETTERS

  File names and file extension names. For example, "the ROUTER.EXE file."

NOTE

You may enter information in either uppercase or lowercase characters.

Keyboard keys that you press are shown in angle brackets. For example, "the <Enter> key."

The term **WNIM**, referred to throughout this manual, is an acronym for Novell's Wide area Network Interface Module.

The term **bps**, referred to throughout this manual, is an acronym for bits per second and is a unit of measure for the data rate. **Kpbs** is an acronym for kilo bits per second.

CHAPTER 1
ABOUT NETWARE ASYNC REMOTE ROUTER

INTRODUCTION

This chapter introduces the NetWare Async Remote Router product, and includes an overview of the router installation and operation process.

CAPABILITIES

NetWare Async Remote Bridge connects two or more LANs together, allowing you to perform simple file transfer, access electronic mail, and access a host computer. The two LANs being connected are typically remote from each other, as shown in Figure 1-1.

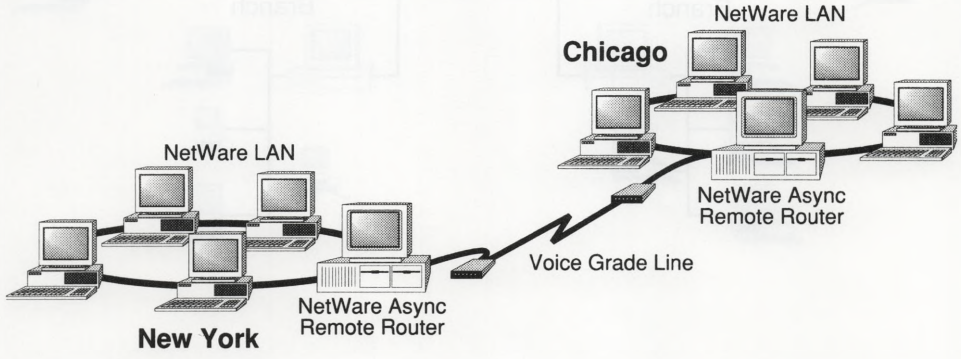


Figure 1-1
NetWare Async Remote Router LAN-to-LAN Connection

NetWare Async Remote Router connects LANs over voice grade telecommunications lines using asynchronous modems. The COM1/COM2 port for the NetWare Async Remote Router supports speeds of up to 2400 bps. The WNIM adapter for the NetWare Async Remote Router supports speeds of up to 19.2 Kbps.

A typical configuration is shown in Figure 1-2, where there is a central hub (home office) with remote branch offices.

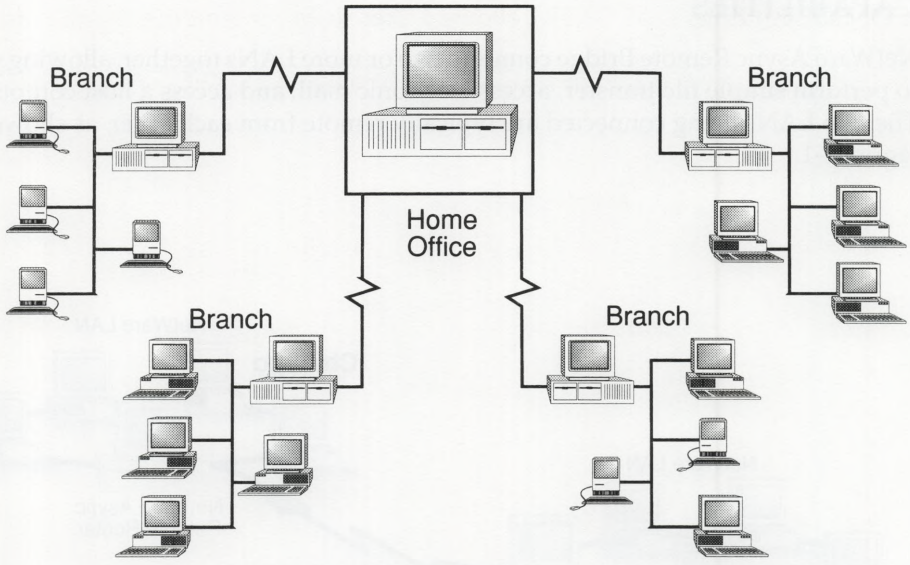


Figure 1-2
Typical NetWare Async Remote Router Connection

All sites, especially central sites, should consider using a WNIM adapter. A WNIM allows "multiport access." This means that if, for example, a central (LAN) office is connected to four remote sites - all four sites could access the LAN simultaneously. If a COM1/COM2 port is used, the user has only one port with which to work, allowing only one remote site to be connected at a time.

The LAN-to-LAN connection is transparent during use, and any number of users on the network can access LAN resources across the link at the same time, subject to performance limitations.

The NetWare Async Remote Router product includes the NetWare Async Remote Router (LAN_DRV_190) diskette(s), which contains drivers for the COM1/COM2 port as well as for the WNIM adapter.

The NetWare Async Remote Router diskette(s) include the ACONFIG and LCONSOLE utilities. ACONFIG allows a user to configure different data rates, phone types, and so forth. LCONSOLE lets a user terminate or initiate LAN-to-LAN connections when the router is up and running. ACONFIG and LCONSOLE are explained in detail in this manual.

SOFTWARE REQUIRED

To complete a NetWare Async Remote Router installation, you need the NetWare Async Remote Router (LAN_DRV_190) diskette(s).

For the *external* router, you also need:

- IBM PC-DOS version 3.x
- Advanced or SFT NetWare, Version 2.1x or 3.x

For the *internal* router (file server), you also need:

- Advanced or SFT NetWare, Version 2.1x

HARDWARE REQUIRED

To complete NetWare Async Remote Router installation, you need to have:

- An IBM PC, XT, AT, or compatible (an 80286- or 80386-based machine is recommended for an *external* router).
- 256 KB of memory for a dedicated *external* router (real mode)
- 640 KB of memory for a nondedicated *external* router (real mode)
- 1MB of memory for a dedicated *external* router (protected mode)
- WNIM adapter(s) and/or a COM1/COM2 port. (The maximum configuration supported is 2 WMIN adapters and 1 COM port, which provides 9 ports.)
- A modem for each port at each location. (See the *NetWare Async Remote Router Rules of Thumb* for a list of supported modems.)
- An RS-232 cable is provided with the WNIM. However, if you are using a COM1/COM2 port or need a greater distance between the router and the modem, additional 9-to-25 pin or 25-to-25 pin RS-232 modem cables might be needed.
- A dialup (switched) or leased phone line per port.

KNOWLEDGE REQUIRED

To install and use the router, you will need to be familiar with the information in the following Novell publications in addition to this manual:

Title	Part No.
NetWare 286 External Routers Supplement	*100-000605-001*
Installing and Maintaining the Network	*183-000265-001*
WNIM+ Adapter Installation Guide	*100-000701-001*

When generating an *external* router, refer to Chapter 1, Planning Your NetWare Router, in your *NetWare 286 External Routers Supplement* before installing NetWare Async Remote Router. This chapter has information you will need to know, such as what the difference is between traditional and NetWare routers, remote and local routers, dedicated and nondedicated routers, and real and protected modes for routers.

Also in that chapter is information about drivers, network addresses and communication buffers, and whether to choose the default or custom method when you run ROUTEGEN.

When generating an *internal* router, refer to Chapter 1 of the *SFT/Advanced NetWare 286 Installation* manual **before installing** NetWare Async Remote Router.

OVERVIEW OF ROUTER INSTALLATION AND OPERATION

The NetWare Async Remote Router installation and operation process includes these steps:

- The NetWare Async Remote Router (LAN_DRV_190) diskette or diskettes are installed.
- The router software is generated. (ROUTEGEN is run for external routers to generate the ROUTER.EXE file, or INSTALL is run for internal routers to generate the NET$OS.EXE file.)
- The router software is configured using ACONFIG.
- The hardware is installed.
- The router software is installed and started.
- Changes to router operation are made using LCONSOLE when needed.

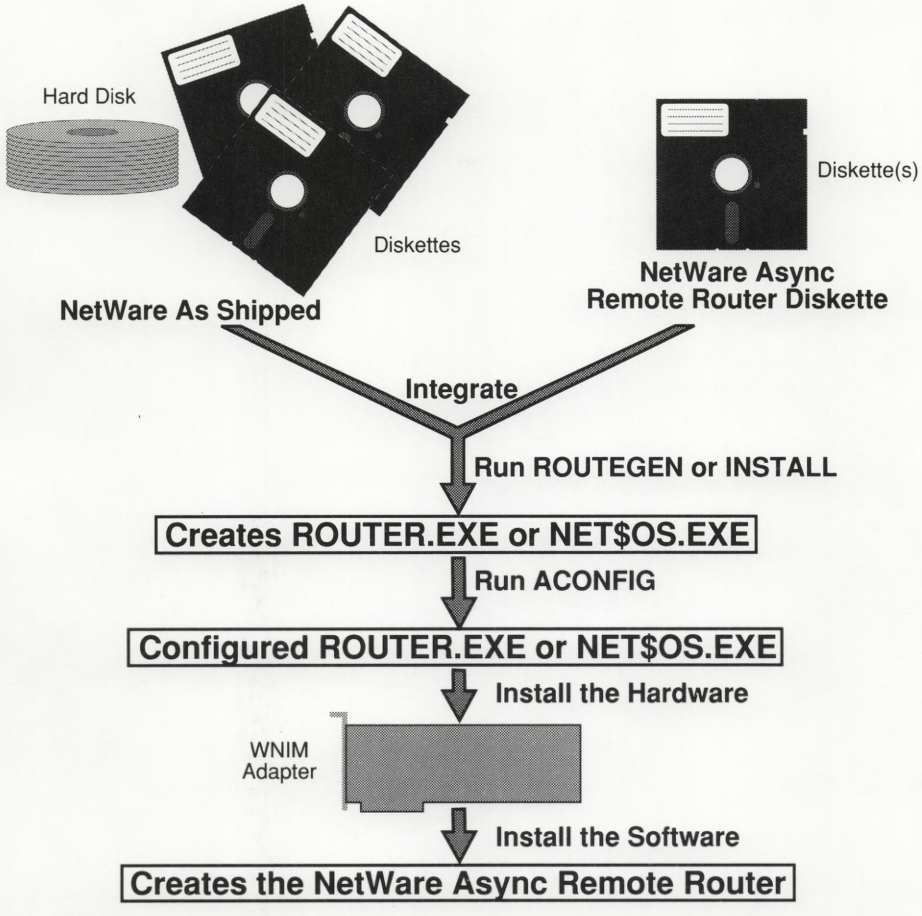
These steps are illustrated in Figure 1-3 and described in the chapters that follow (Chapters 2 through 5).

NOTE

If you are setting up routers for the first time (you have no routers on the system currently), you must follow the procedures given in Chapters 2 and 3 twice (once for the router at one end of a connection, and once for the router at the other end of that connection).

If you want the connection to be automatically established and functioning when the system comes up, make sure you select "Yes" for the "Auto Connect" item; when you run ACONFIG in Chapter 3 for one of these routers.

If you specify the "Auto Connect" item as "No" for **both** routers, you must go to LCONSOLE to establish the connection as described in Chapter 5. (Until you do, there is no connection between the routers and they cannot communicate.)



NOTES:

1. A router must be generated on each side of the connection.

2. To change router operation after the installation, run LCONSOLE.

Figure 1-3
NetWare Async Remote Router Installation and Operation Process

CHAPTER 2
GENERATING THE ROUTER SOFTWARE

INTRODUCTION

To generate the NetWare Async Remote Router software, you need to

- make a working copy of the NetWare Async Remote Router diskette(s), and
- run the INSTALL or ROUTEGEN program.

If you are generating an external router, make the working copy of the NetWare Async Remote Router diskette(s) as described in the Installing the NetWare Async Remote Router (LAN_DRV_190) Diskette section of this chapter, then run ROUTEGEN as decribed in the Generating the External Router Software section of this chapter.

If you are generating an internal router, make the working copy of the NetWare Async Remote Router diskette(s) as described in the Installing the NetWare Async Remote Router (LAN_DRV_190) Diskette section of this chapter, then run INSTALL as described in the Generating the Internal Router Software section of this chapter.

Installing the Netware Async Remote Router (LAN_DRV_190) Diskette(S)

The NetWare Async Remote Router diskette(s) contain the following files:

File Name	Function
SSCOMMX.OBJ	Shell COM port driver
COMMX.LAN	COM driver description file
ACOMMX.OBJ	COM port driver
BCOMMX.OBJ	COM port driver
CCOMMX.OBJ	COM port driver
DCOMMX.OBJ	COM port driver
WNIM.LAN	WNIM driver description file

ALNKWNIM.OBJ	WNIM adapter driver
BLNKWNIM.OBJ	WNIM adapter driver
CLNKWNIM.OBJ	WNIM adapter driver
DLNKWNIM.OBJ	WNIM adapter driver
NACSLOAD.BIN	WNIM load module
ACONFIG.EXE	ACONFIG utility program
ACONFIG.HLP	ACONFIG utility help
LCONSOLE.EXE	LCONSOLE utility program
LCONSOLE.HLP	LCONSOLE utility help
MSG$V11.DAT	System message file*
ERR$V11.DAT	System error file*
HELP$V11.DAT	System help file*
IBM$V11.OVL	Network overlay file*
$V11.OVL	Local overlay file*

* Required to run ACONFIG/LCONSOLE utilities.

Install the NetWare Async Remote Router (LAN_DRV_190) diskette(s) for the *internal* or *external* router as follows:

1. Make a working copy of the NetWare Async Remote Router diskette(s).

   a) Boot a workstation with DOS 3.x.

   b) Use the DOS DISKCOPY command to copy the diskette onto the working diskette.

NOTE

Do not use the DOS COPY command to make a working copy. The DISKCOPY command ensures that the copied diskette(s) are formatted correctly, have the correct volume name, and have all the directories and files of the source diskette.

---

   c) Label the new diskette(s) to identify properly.

   d) Store the original diskette(s) in a secure place. Throughout the NetWare Async Remote Router installation, whenever you are instructed to use a specific diskette, use the working copy.

2. Copy ACONFIG into the system directory that contains copies of the original NetWare files.

3. Copy NACSLOAD.BIN from the NetWare Async Remote Router diskette to the directory or diskette where the ROUTER.EXE file resides.

The files you copy will be accessed by INSTALL or ROUTEGEN when you generate the router.

GENERATING THE EXTERNAL ROUTER SOFTWARE

The ROUTEGEN utility is used to generate the software for an *external* router. ROUTEGEN is executed, creating the ROUTER.EXE file.

To generate the *external* router software, proceed as follows:

1. Refer to the *Installing and Maintaining the Network* manual packaged with NetWare.
2. If using the hard disk or network disk method for ROUTEGEN, create a directory called LAN_DRV_.190 under the working generation directory. Copy all files from the NetWare Async Remote Router diskette(s) to the new directory.
3. Prepare to run ROUTEGEN and run ROUTEGEN as instructed in the *Installing and Maintaining the Network* manual until you get to the section where you must select the LAN drivers.
4. When you get to the Router Generation form window go to the Driver Selection window and choose "Async Remote Router WNIM" if you have a WNIM adapter. Choose "Async Remote Router COM1/COM2" if you have a COM1/COM2 port. The Async Remote Router driver cannot be installed on Network board A.

   If the Async Remote Router driver selection does not appear in the driver selection window, press the <Ins> key and you will be prompted to place the Async Remote Router diskette into any drive. Press <Enter> to continue and the Async Remote Router drivers will be displayed.

5. When assigning network addresses in the Router Generation window in ROUTEGEN, assign a unique network address for the Async Remote Router driver.
6. Continue running the rest of ROUTEGEN and prepare to boot the router as instructed in the supplement.
7. Configure the router software using ACONFIG as described in Chapter 3 of this manual.

GENERATING THE INTERNAL ROUTER SOFTWARE

The INSTALL utility is used to generate the software for an *internal* router. When INSTALL is executed, it creates the NET$OS.EXE file.

To generate the *internal* router software, proceed as follows:

1. Refer to the *Installing and Maintaining the Network* manual packaged with NetWare.
2. If using the hard disk or network disk method for INSTALL, create a directory called LAN_DRV_.190. Copy all files from the NetWare Async Remote Router diskette(s) to this new directory.
3. Copy the LCONSOLE.EXE, LCONSOLE.HLP, $V11.OVL, IBM$V11.OVL, HELP$V11.DAT,MSG$V11.DAT, and ERR$V11.DAT files to the public directory where you will run INSTALL.
4. Copy the ACONFIG.EXE, ACONFIG.HLP, andNACSLOAD.BIN files to the system directory where you will run INSTALL.
5. Flag the NET$OS.EXE file "SRW" (Shareable Read/Write).
6. Run INSTALL by following the instructions in the *Installing and Maintaining the Network* manual.
7. Choose the Select Loaded item, and you should see the Async Remote Router WNIM or COM1/COM2 drivers in the list of available LAN drivers. If you do not see these, press the <Ins> key and you will be prompted to place the Async Remote Router diskette into any drive.
8. Continue configuring and linking INSTALL to generate the NET$OS.EXE file.
9. Reboot the file server.
10. Once the operating system is installed, configure the router software. Use ACONFIG as described in Chapter 3 of this manual.

CHAPTER 3
CONFIGURING THE ROUTER SOFTWARE

INTRODUCTION

After generating the router software program, you need to configure the router software. Use ACONFIG to configure NET$OS.EXE if you have an *internal* router, or to configure ROUTER.EXE if you have an *external* router.

You can specify the configuration settings for your installation by using ACONFIG, and then save the configuration settings you made.

To start ACONFIG, you can use either the floppy disk or hard disk/network drive method. It is recommended that you use the hard disk/network drive method, if possible.

Follow these steps if you have an *external* router

1. Start ACONFIG as described in the Starting ACONFIG for an External Router section of this chapter.
2. Configure the external router as described in the Configuring the Router Using ACONFIG section of this chapter.

Follow these steps if you have an *internal* router

1. Start ACONFIG as described in the Starting ACONFIG for an Internal Router section of this chapter.
2. Configure the internal router as described in the Configuring the Router Using ACONFIG section of this chapter.

STARTING ACONFIG FOR AN EXTERNAL ROUTER

If you have an external router, you can configure the router either by the floppy disk or the hard disk/network drive method.

NOTE

Run ACONFIG from where you ran ROUTEGEN. Make sure that the the path to the ROUTER.EXE file is less than 30 characters.

Floppy Disk Method

To run ACONFIG using floppy disks, you need the NetWare Async Remote Router diskette(s) and the diskette containing the ROUTER.EXE file created by ROUTEGEN-- either the ROUTEGEN-2 (3.5-inch format), or the ROUTEGEN-2 or ROUTEGEN-3 (5.25-inch format) diskette.

If your computer has **two** floppy drives

1. Insert the NetWare Async Remote Router diskette with ACONFIG into drive A. Insert either the ROUTEGEN-2 (3.5-inch format) or the ROUTEGEN-2 or ROUTEGEN-3 (5.25-inch format) diskette into drive B.
2. Type **ACONFIG B:ROUTER.EXE**, and press <Enter>.

Floppy drive

If your computer has **one** floppy drive

1. Insert the NetWare Async Remote Router diskette with ACONFIG into drive A.
2. Type **ACONFIG**, and press <Enter>. ACONFIG prompts you for the filename.
3. Remove the NetWare Async Remote Router diskette, and insert the ROUTEGEN-2 or ROUTEGEN-3 diskette into drive A.
4. Type **ROUTER.EXE**, and press <Enter>.

A **"Please Wait"** message displays during the several seconds it takes to load the router file onto the computer. Proceed with the instructions in the Configuring the Router Using ACONFIG section of this chapter.

Hard Disk or Network Drive Method

If you run the router software utilities from a hard disk or network drive, you should first copy the utilities from the NetWare Async diskette(s) onto a hard disk or a network drive (if you have not already done so).

1. Go to the directory containing the ACONFIG program.
2. Type **ACONFIG** *drive\pathname***ROUTER.EXE**, and press <Enter>.

STARTING ACONFIG FOR AN INTERNAL ROUTER

Start ACONFIG for the internal router as follows

1. After your server has been installed, log in to the server and get into the system directory. There you will find the NET$OS.EXE file.
2. Type **FLAG**, and press <Enter>. Set the protection for this file to "SRW" (Shareable Read/Write).
3. Type **ACONFIG NET$OS.EXE**, and press <Enter>.

A **"Please Wait"** message displays during the several seconds it takes to load the router file onto the computer. Proceed with the instructions in the Configuring the Router section of this chapter.

CONFIGURING THE ROUTER USING ACONFIG

The process of configuring the router using ACONFIG is identical, regardless of whether you are configuring an *external* or *internal* router.

If you are configuring an *external* router, the top of the ACONFIG screen shows **"Configuring File ROUTER.EXE"** if you are configuring an internal router, the top of the screen shows **"Configuring File NET$OS.EXE."**

You can use a mouse and/or the arrow keys on your keyboard to perform ACONFIG configuration. When you use a mouse, a cursor displays on the ACONFIG screen. This cursor moves as you move the mouse.

When an ACONFIG screen displays, one of the items will be highlighted. To select any item on the screen, move the arrow keys and/or mouse cursor to highlight that item. (If characters must be entered to configure the item, a cursor will display so you can enter the needed information.) Press the <Enter> key.

When the last item in an ACONFIG screen has been configured, the highlight returns to the first configurable item at the top of the screen. This indicates that configuration of this screen is complete. When you exit an ACONFIG screen, save your selections as instructed in the Saving Your Configuration Selections section at the end of this chapter. You can save your selections and exit ACONFIG **anytime** during the configuration process, and return later to configure the rest.

Main Menu

If you specified more than one remote communication driver during the router generation process, the Select LAN Driver Window displays on the screen. For example, if you selected LAN B and LAN C as remote communication drivers, this window would list LAN B and LAN C. Select the LAN you want to configure. The Main Menu Window shown in Figure 3-1 displays.

NOTE

If you specified only one communication driver during the router generation process (using ROUTEGEN or INSTALL), the Main Menu Window shown in Figure 3-1 displays. (The Select LAN Driver Window does not display, and you do not select a LAN driver.)

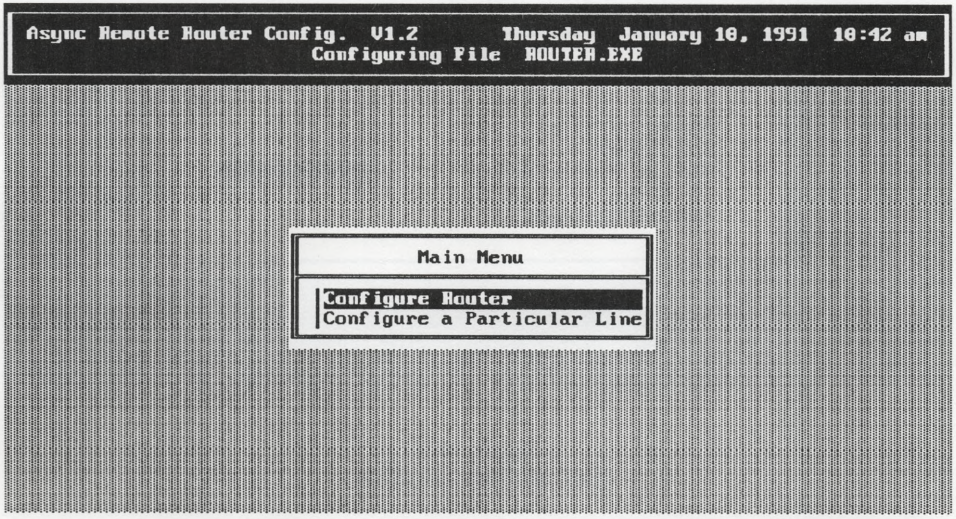

Async Remote Router Config. V1.2 Thursday January 10, 1991 10:42 am
Configuring File ROUTER.EXE
Main Menu
Configure Router
Configure a Particular Line

Figure 3-1
ACONFIG Main Menu

NOTE

You must configure each router and each line for each driver selected during the router generation process.

Naming the Router and Setting Access Privileges

Select the "Configure Router" item in the Main Menu and the Edit Router Window shown in Figure 3-2 displays.

Each of the items in the Edit Router Window is described in the following text. Configure these items, save your selections, and return to the Main Menu.

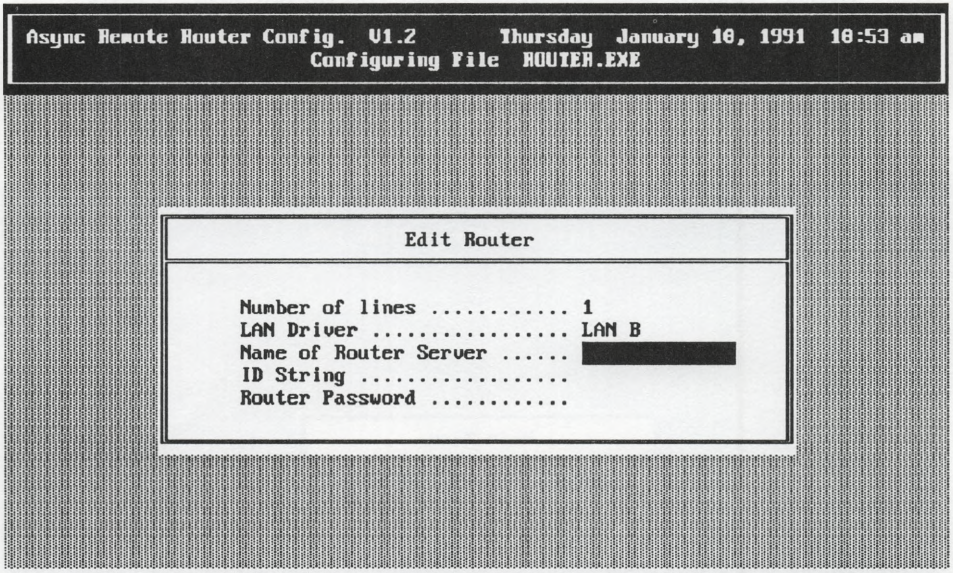

Async Remote Router Config. V1.2 Thursday January 10, 1991 10:53 am
Configuring File ROUTER.EXE
Edit Router
Number of lines 1
LAN Driver ..... LAN B
Name of Router Server .....
ID String .....
Router Password .....

Figure 3-2
Edit Router Window

Number of Lines

Displays the number of lines to be configured. This number is "4" for a WNIM adapter, "1" for a COM1/COM2 port. (This item is fixed; you cannot configure it.)

LAN Driver

Displays the driver being configured. (This item is fixed; you cannot configure it.)

Name of Router Server

Specifies the name of the router server on the other side of the connection from the router being configured. This name can have a maximum of 45 characters. It is recommended that you use your company name and location so the router is easily identifiable (for example, NOVELL_PROVO). Spaces may not be used. You may, however, use the underline character as shown in the example. Each "LAN" driver and router must have a name unique in the entire internetwork. For the *external* router, each WNIM adapter/COM port must have a unique name. If not, the **"Address change detected on server name"** message displays on the server console and router. Each WNIM adapter/COM port is recognized as a separate LAN.

ID String

Specifies an ID string that controls access to your network. This password is an optional security feature.

Record the exact ID string you entered here (including uppercase/lowercase), so that you can specify it again later in LCONSOLE (Chapter 5) when you specify the "Other Side ID String" item. Up to nine characters can be entered to specify the ID string.

If you did not specify an ID string here, do not specify an ID string in LCONSOLE.

Router Password

Specifies a password that controls access to the router. This control password is a security feature used to limit who can control the router. While this password is optional, it is recommended that you use it.

A maximum of nine characters can be entered to specify the password. Record the exact password you enter here (including uppercase/lowercase). This same password is specified again later in LCONSOLE (Chapter 5) when you specify the "Router Password" item in the Establish Connection Window or Terminate Connection Window.

Selecting the Line to Configure

Select the "Configure a Particular Line" item in the Main Menu. If you have installed the WNIM adapter, the Select Line Window shown in Figure 3-3 displays.

The Select Line Window shows the four lines ("1," "2," "3," and "4") that are associated with the WNIM adapter.

(If you do not have a WNIM adapter, the Select Line Window shown in Figure 3-3 will not display. Instead, the Edit Line Window shown in Figure 3-4 displays.)

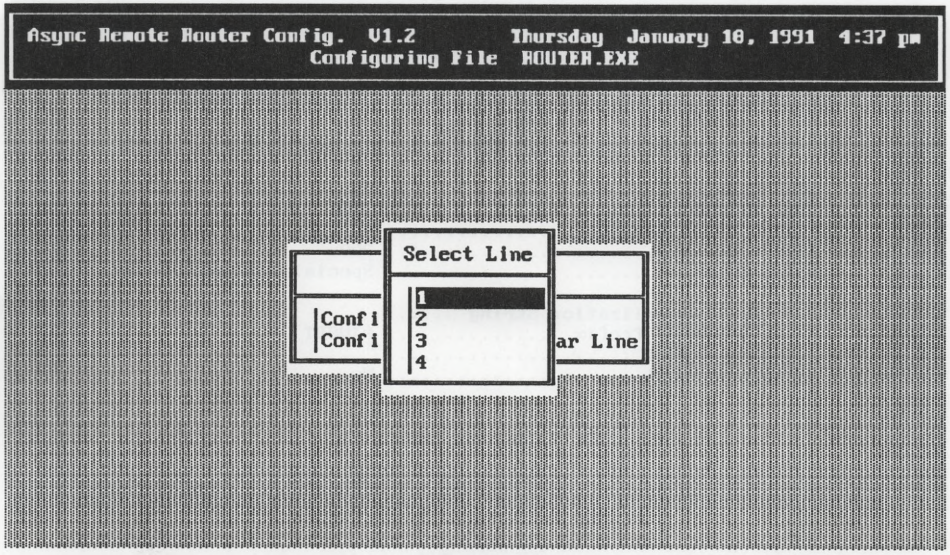


Figure 3-3
Select Line Window

If the Select Line Window is displaying is displaying, select the line you want to configure and the Edit Line Window shown in Figure 3-4 displays.

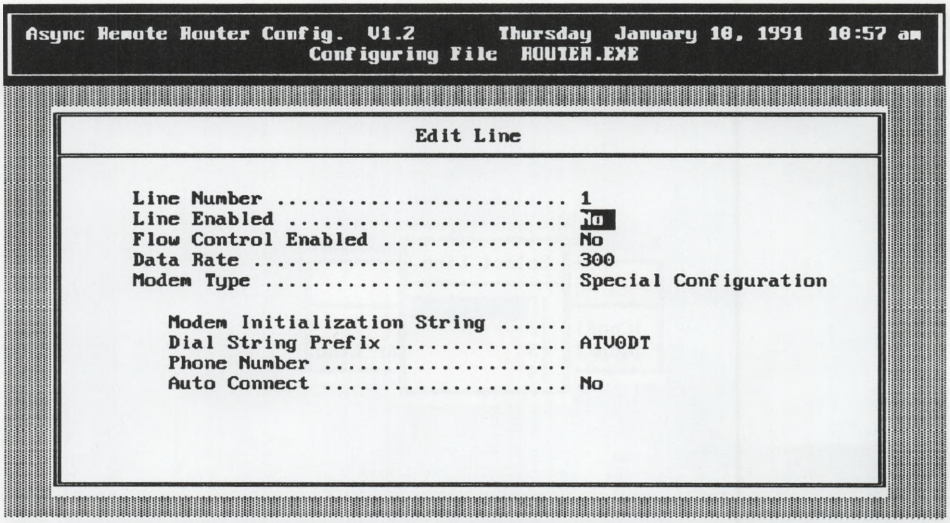

Async Remote Router Config. V1.2 Thursday January 10, 1991 10:57 am
Configuring File ROUTER.EXE
Edit Line
Line Number 1
Line Enabled ..... No
Flow Control Enabled ..... No
Data Rate 300
Modem Type ..... Special Configuration
Modem Initialization String .....
Dial String Prefix ATV0DT
Phone Number .....
Auto Connect ..... No

Figure 3-4
Edit Line Window

Configuring a Particular Line

The items in the Edit Line Window are associated with the line displayed in the "Line Number" item. Each item is described in the following text.

Line Number

Displays the number of the line being configured. This number matches the line number you previously chose in the Select Line Window (Figure 3-3). All other items in the Edit Line Window that you will be configuring apply to this line.

This item is fixed; you cannot configure it in this window. If you want to configure a line other than the one displayed, return to the Select Line Window and select the line you need there. When you return to the Edit Line Window, the new line number you chose should display as the "Line Number" item.

Line Enabled

Enables the line for use; disables the line from use. When the line is disabled, the asynchronous driver does not service this line.

When you select this item, the Enable Line? Window shown in Figure 3-5 displays.

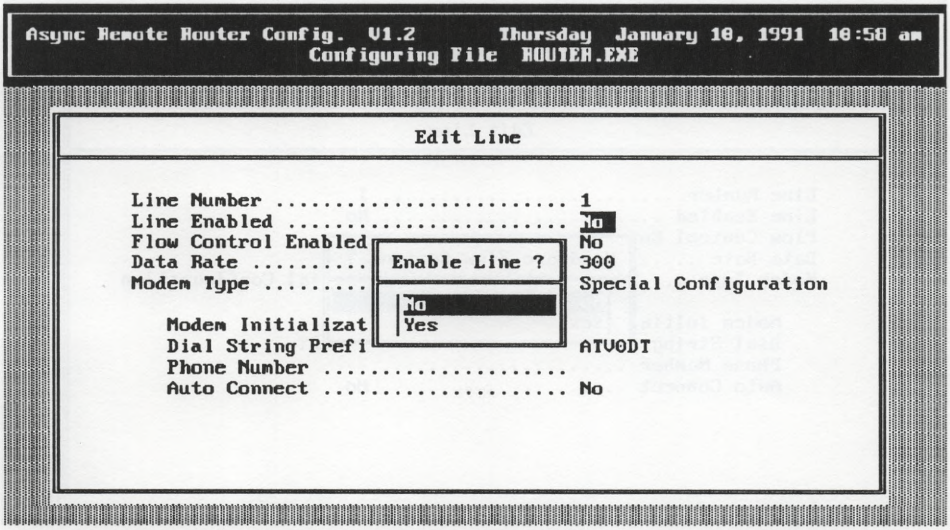


Figure 3-5
Enable Line? Window

Select "Yes" or "No."

Flow Control Enabled

Enables/disables hardware flow control (RTS/CTS handshaking) for the line.

When you select this item, the Hardware Flow Control? Window shown in Figure 3-6 displays.

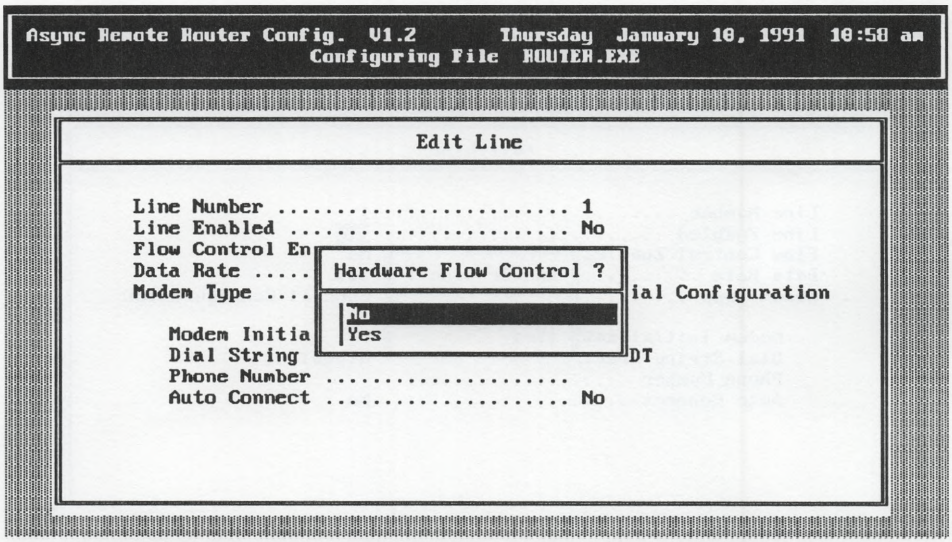


Figure 3-6
Hardware Flow Control? Window

Select "Yes" or "No."

Data Rate

Sets the data rate for the modem at the router end of the connection. This is the modem that was specified in the "Modem Type" item. (Make sure you set the modem at each end of a connection to the same data rate.) Data rate

When you select the "Data Rate" item, the Data Rate Window shown in Figure 3-7 displays.

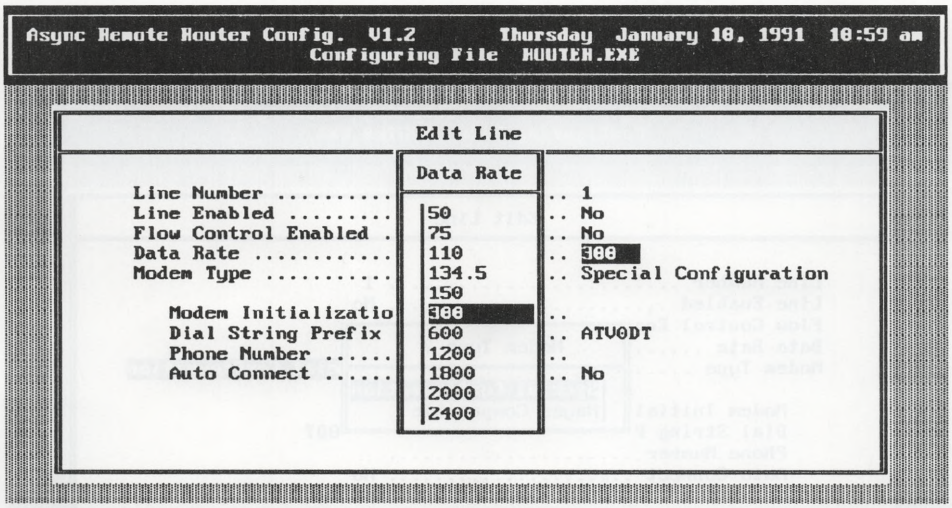


Figure 3-7
Data Rate Window

NOTE

COM1/COM2 ports of PCs running at a speed of 16 Mhz or less might not support a data rate greater than 2400 bps. If you want to use a greater rate, you must use a WNIM adapter.

Check the manual that came with your modem for the appropriate data rate. Select the data rate.

Modem Type

Specifies the type of modem being used for the router at this end of the connection. When you select this item, the Modem Type? Window displays as shown in Figure 3-8.

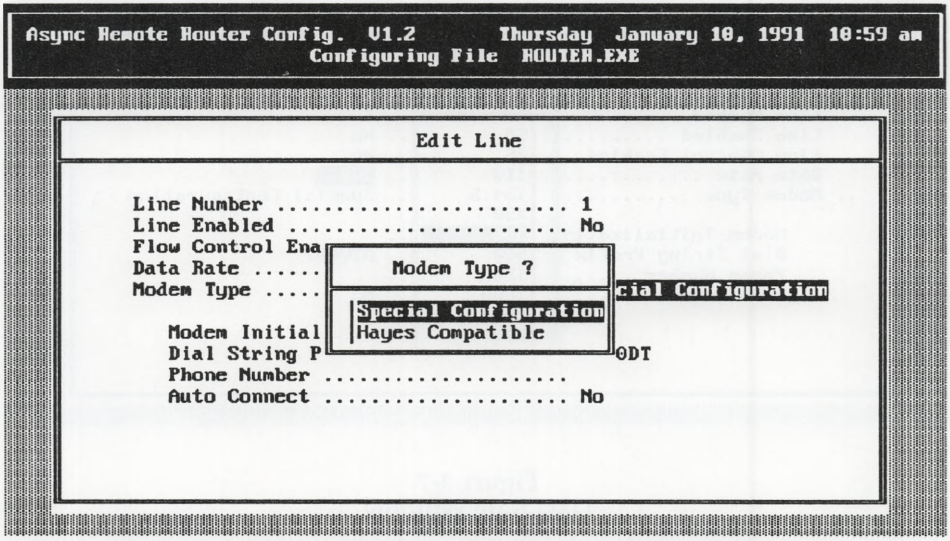


Figure 3-8
Modem Type? Window

"Special Configuration" allows you to use almost any modem, including a Hayes or compatible. However, the NetWare Async Remote Router software sets nothing but the data rate.

NOTE

Any answering and connecting to incoming calls that is done must be handled manually.

"Special Configuration" also allows you to use a remote connection in more diverse ways. For example, you can use a Hayes or compatible with a leased line, a satellite transceiver system, or any hardware that stays in a communication-ready state at all times.

You must select "Special Configuration" if you have a leased line.

Otherwise, select "Hayes Compatible" or "Telebit/Ven-Tel PEP."

If you select the Telebit modem, the data rate defaults to 9600 bps.

Phone Type

This item does not display if you chose the "Modem Type" item as "Special Configuration." It displays only if you chose the "Modem Type" item as "Hayes Compatible" or "Telebit/Ven-Tel PEP."

Specifies the type of phone as pulse or touch tone.

When you select this item, the Phone Type? Window shown in Figure 3-9 displays.

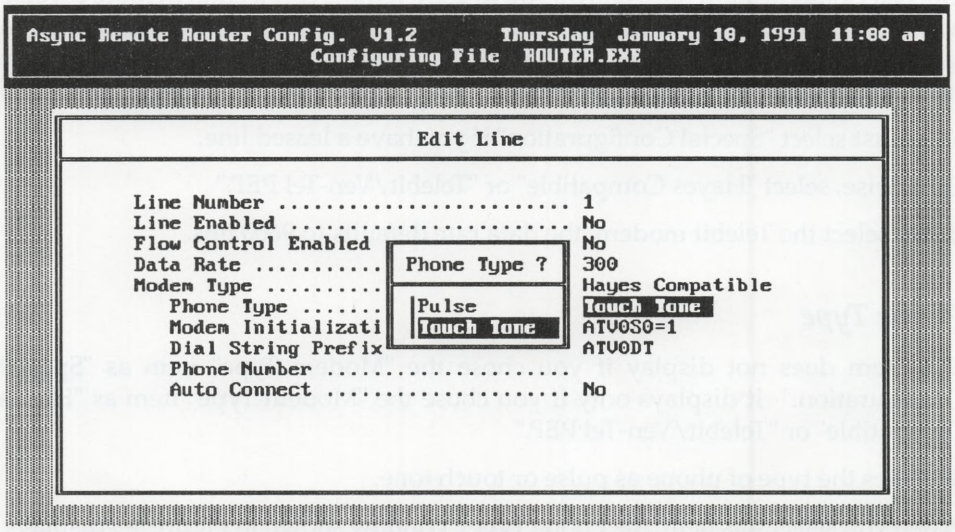


Figure 3-9
Phone Type Window

Select "Touch Tone" or "Pulse."

Modem Initialization String

"Modem Initialization String" specifies the command string used to initialize the modem specified in the "Modem Type" field. This field cannot be changed, regardless of the modem type you select. Changing the "Modem Initialization String" option is not supported in any configuration, **even though you might be able to enter characters** in the "Modem Initialization String" field.

Dial String Prefix

Specifies the modem command string that precedes the phone number specified as the "Phone Number" item. This item is set and cannot be changed if you selected the "Modem Type" as "Hayes Compatible" or "Telebit/Ven-Tel PEP." The characters displayed depend on the data rate you previously selected.

If you specified the "Modem Type" item as "Special Configuration," you can input a specific string, if needed.

Specify the "Dial String Prefix" item, if needed.

Phone Number

Displays the phone number of the default remote router to call. The "Phone Number" item is the phone number of the remote location the modem is calling.

If you are dialing an outside number from a PBX (Private Branch Exchange) telephone system, the outside number is preceded by the outside line access number (usually 9). If there is an outside line access number, you need to enter a comma after this number to provide a two-second pause in the dialing sequence.

Specify the "Phone Number" item. Include any other characters specified by the modem documentation.

Auto Connect

Specifies if the connection between routers is to be manual or automatic. If this item is selected as "Yes," the router will automatically be connected to the remote router identified in the "Auto ID String" item when the system is booted. If this item is selected as "No," you must establish the connection manually in LCONSOLE (Chapter 5).

When you select this item, the Auto Connect Window displays as shown in Figure 3-10.

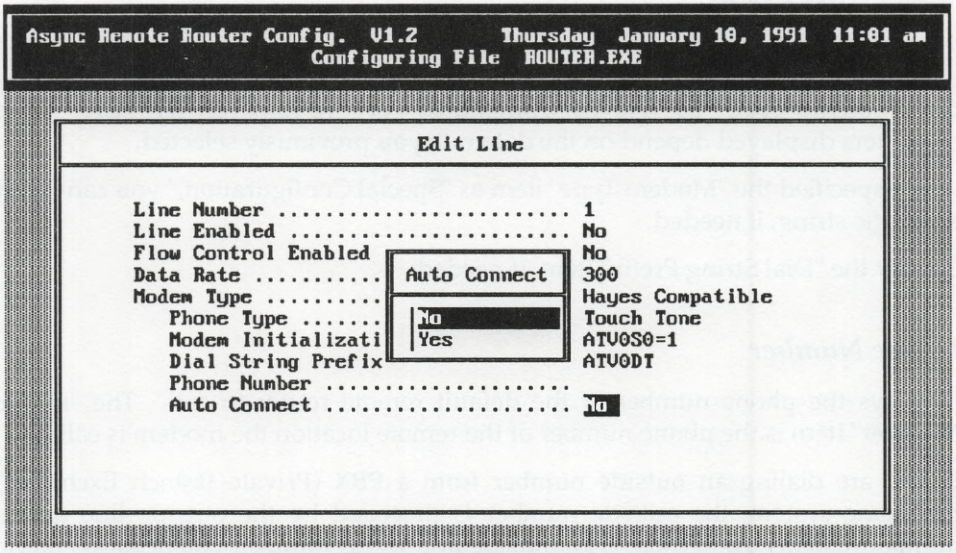


Figure 3-10
Auto Connect Window

Select "Yes" or "No." If you selected "Yes," the "Auto ID String" and "Life Class" items display.

NOTE

If you are selecting "Yes" for "Auto Connect," select "Yes" only on one side of the connection.

Auto ID String

This item displays only if the previous "Auto Connect" item was specified as "Yes."

For a connection that will automatically be established when the system is booted, this item identifies the router on the other side of this connection.

Specify the "Auto ID String" item. Make sure to match the "ID String" specified in the Edit Router Window, including uppercase and lowercase letters.

Life Class

This item displays only if the "Auto Connect" item was specified as "Yes."

Specifies the automatic connection to be continuous or timed as follows

- Continuous" should be selected if you want to manually break the connection after using, or if you have a direct connect line or leased telephone line.
- "Timed" should be selected if you want to set the router to wait a certain amount of time after the last packet is sent and before it automatically terminates the connection.

When you select this item, the Life Class Window shown in Figure 3-11 displays.

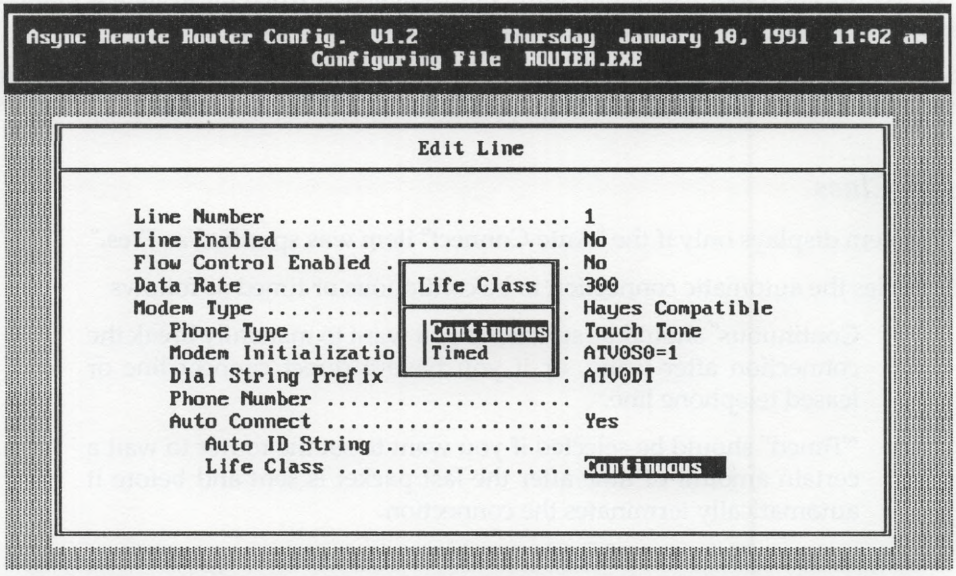

Async Remote Router Config. V1.2 Thursday January 10, 1991 11:02 am
Configuring File ROUTER.EXE
Edit Line
Line Number 1
Line Enabled ..... No
Flow Control Enabled . . No
Data Rate 300
Modem Type ..... . Hayes Compatible
Phone Type ..... . Touch Tone
Modem Initializatio . ATV0S0=1
Dial String Prefix . ATV0DT
Phone Number .....
Auto Connect ..... Yes
Auto ID String .....
Life Class ..... Continuous
Life Class
Continuous
Timed

Figure 3-11
Life Class Window

Select "Continuous" or "Timed."

Idle Time-Out

This item displays only if the "Auto Connect" item was specified as "Yes," and the "Life Class" item was specified as "Timed."

Specifies the amount of time the router waits before terminating an automatic connection.

Specify the appropriate number of minutes.

At this point, you have completed configuring the Edit Line Window for the line shown in the "Line Number" item.

- If you have WNIM adapter(s) installed, you have additional lines to configure. Repeat the Edit Line Window configuration process until all four lines of each adapter are configured.
- If you have more than one driver, you need to configure each line of each WNIM or COM1/COM2 port. Repeat the Edit Line Window configuration process until all lines of all drivers are configured.

Save your selections as described in the Saving Your Configuration Selections section at the end of this chapter.

NOTE

When you have completed configuring the router using ACONFIG, flag the NET$OS.EXE file as **read only.**

SAVING YOUR CONFIGURATION SELECTIONS

To exit the current screen, press <Esc> until the Save Form? Window shown in Figure 3-12 displays.

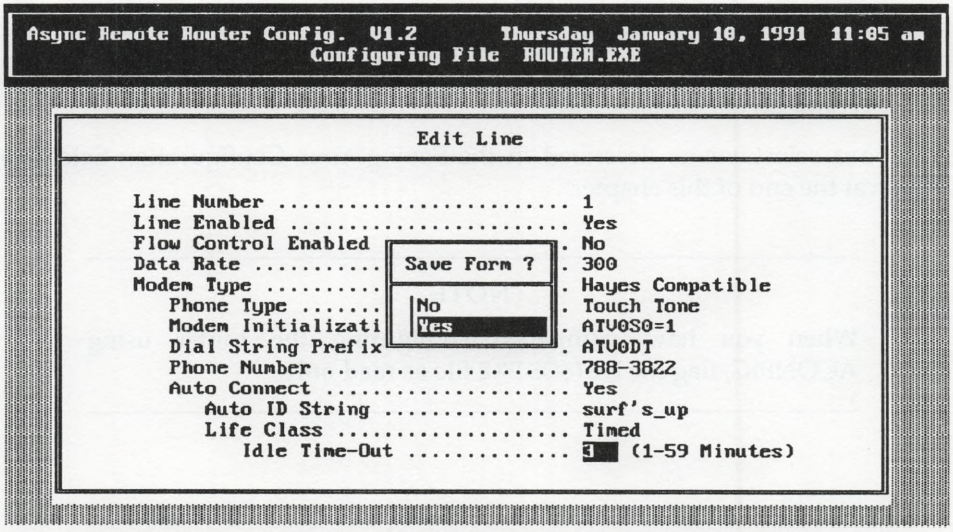

Async Remote Router Config. V1.2 Thursday January 10, 1991 11:05 am
Configuring File ROUTER.EXE
Edit Line
Line Number 1
Line Enabled ..... Yes
Flow Control Enabled . No
Data Rate 300
Modem Type ..... . Hayes Compatible
Phone Type ..... . Touch Tone
Modem Initializati . ATV0S0=1
Dial String Prefix . ATV0DT
Phone Number 788-3822
Auto Connect ..... Yes
Auto ID String ..... surf's_up
Life Class ..... Timed
Idle Time-Out ..... 3 (1-59 Minutes)
Save Form ?
No
Yes

Figure 3-12
Save Form? Window

1. Select "Yes" to save or "No" to quit, and press <Enter>. You are returned to the ACONFIG Main Menu.
2. Press <Esc>.
   - If you selected "Yes" in step 1, the **"Generating file checksum... Please wait."** message displays briefly. Your selections are saved.
   - If you selected "No" in step 1, your selections are not saved.

The Exit ACONFIG Window displays.

3. Select "Yes" to exit ACONFIG and return to the system prompt; "No" to remain in ACONFIG and return to the Main Menu. Press <Enter>.

NOTE

After you have configured your router using ACONFIG, reboot the file server/router. Otherwise, the file server/router will not recognize the router you have just configured.

CHAPTER 4
INSTALLING THE WNIM ADAPTER

INTRODUCTION

The COM1/COM2 port is already on your workstation and does not need to be installed. The WNIM adapter needs to be installed.

INSTALLATION PROCEDURE

To install, follow the instructions in Novell's *WNIM+ Adapter Installation Guide* document packaged with the adapter. Set the switch settings to the values given in that document.

The valid combinations of WNIM switch settings for NetWare Async Remote Router are:

Option	I/O Port	Base Memory Address
0	280	A000
1	290	D000
2	290	E000
3	280	D000

CHAPTER 5
INSTALLING AND OPERATING THE ROUTER

INTRODUCTION

After the hardware is installed and the software is configured, you need to install the NetWare Async Remote Router software as described in this chapter and start router operations. You can then run the router operator console using the LCONSOLE utility as described in this chapter.

INSTALLING AND RUNNING THE ROUTER SOFTWARE

To install and run the router software you generated and configured, proceed as instructed in the next two subsections.

Copying the Software onto the Router

If you have an external router, you will need to prepare a router boot diskette or prepare to boot from the router's local hard disk. Follow the instructions in the Preparing to Boot the Router section of the NetWare 286 External Routers Supplement. If using a WNIM adapter, make sure you copy the NACSLOAD.BIN file to the router boot disk, then boot the router as instructed in the Operating the Router section of the supplement.

Using INSTALL to Install the Software

If you have an internal router, install the software by following the instructions in the Installing NetWare on the File Server section of the *SFT/Advanced NetWare 286 Installation* manual. The router is automatically enabled when you boot the file server.

USING LCONSOLE

LCONSOLE is the operator console for the router. The LCONSOLE utility lets you view the status of a connection, change the dialing directory, establish a connection, terminate a connection, or reset a modem. The utility can be used from any workstation, using any username permitted access to the utility. LCONSOLE can be used anytime while the router is operating.

To run LCONSOLE, start as described in the Starting LCONSOLE section. If you need help while you are in LCONSOLE, refer to the LCONSOLE Help Screens section.

- To view the status of the connection - go to the Viewing the Current Status section and perform the procedure there. (If you made changes to router operations using LCONSOLE and need to check the new status, you must first exit and reenter LCONSOLE.)
- To change the dialing directory - go to The Dialing Directory section and perform the procedure there. Then, go to one or more of the following
  - Adding a Router Entry to the Dialing Directory section to add a router to the dialing directory.
  - Deleting a Router Entry from the Dialing Directory section to delete a router from the dialing directory.
  - Changing Router Settings in the Dialing Directory section to modify a router in the dialing directory.
- To establish a connection to a router not in the dialing directory - go to the Establishing a Connection to a Router Not in the Dialing Directory section and perform the procedure there.
- To establish a connection to a router in the dialing directory - go to the Establishing a Connection to a Router in the Dialing Directory section and perform the procedure there.

- To terminate a connection - go to the Terminating a Connection section and perform the procedure there.
- To reset the modem - go to the Resetting the Modem section and perform the procedure there.

Once you are in LCONSOLE, you can move around the screen by using a mouse and/or by pressing the arrow keys on your keyboard. If you are using a mouse, a cursor will display on your screen.

To select an item that appears on an LCONSOLE screen, move the cursor to highlight it and press the <Enter> key.

You can exit LCONSOLE at anytime. To do so, refer to the Exiting LCONSOLE section at the end of this chapter.

Starting LCONSOLE

NOTE

Make sure you have the version of LCONSOLE.EXE and LCONSOLE.HLP files that came on the NetWare Async Remote Router diskette installed in your system and public directories. If not, copy them there before you start running LCONSOLE.

To access the LCONSOLE utility, type **LCONSOLE** and press <Enter>. A window with the list of available routers displays as shown in Figure 5-1.

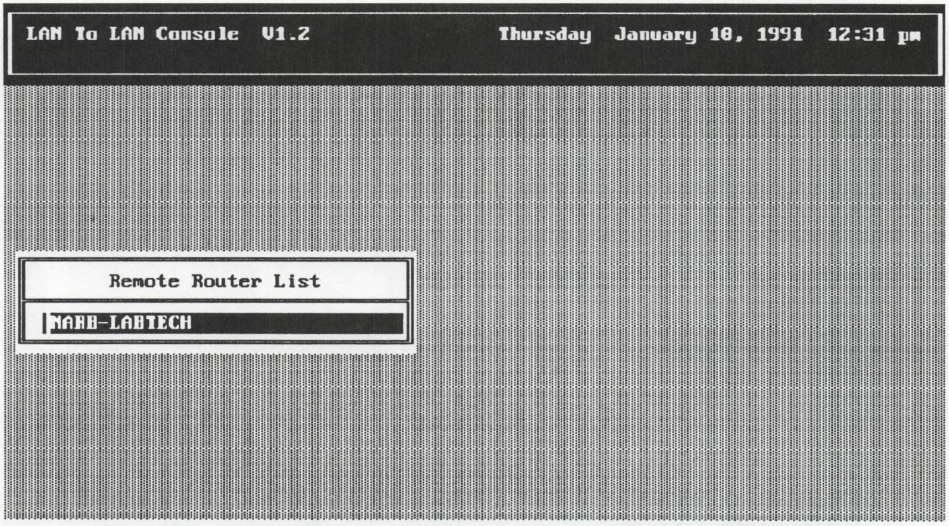


Figure 5-1
Remote Router List Window

Select the router with which you want to communicate, and the Options Window shown in Figure 5-2 displays.

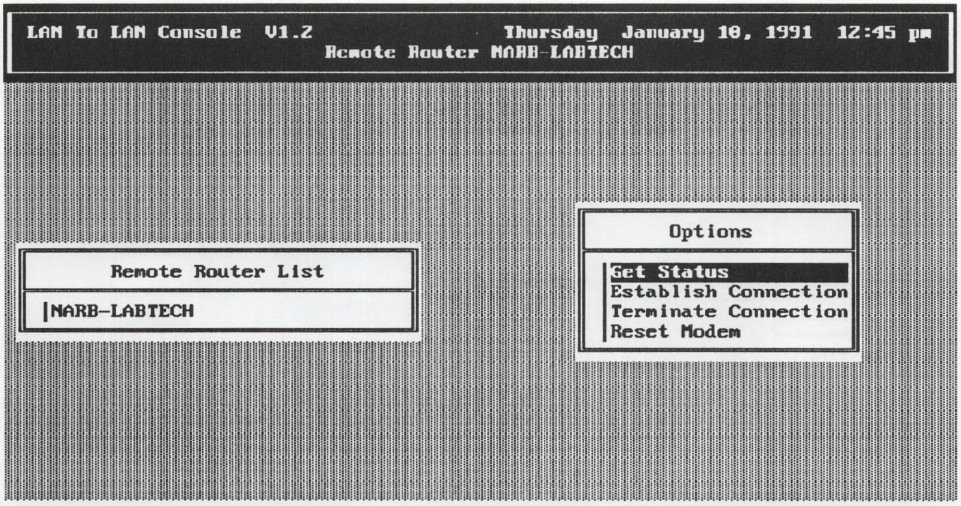


Figure 5-2
Options Window

LCONSOLE Help Screens

To obtain help while you are in LCONSOLE, press the <F1> key, and a help window like the one shown in Figure 5-3 displays.

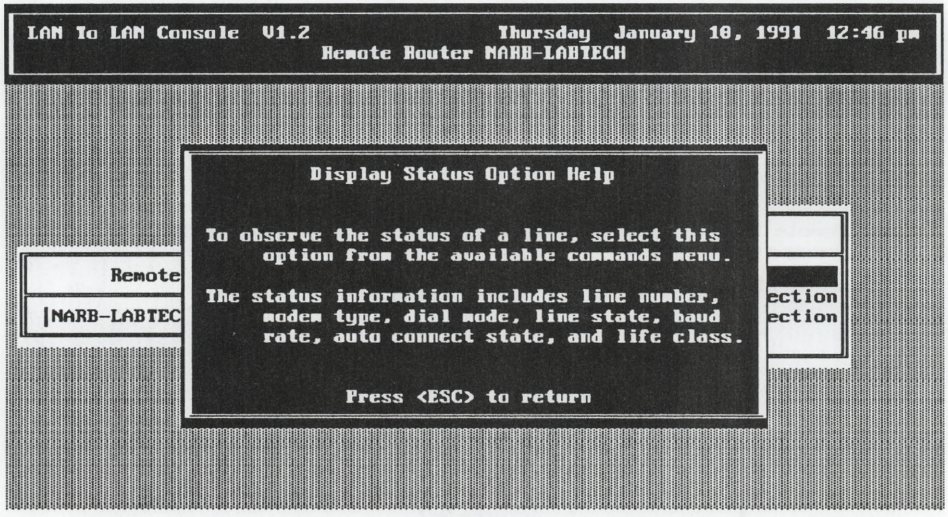

LAN To LAN Console V1.2
Thursday January 10, 1991 12:46 pm
Remote Router NARB-LABTECH
Display Status Option Help
To observe the status of a line, select this option from the available commands menu.
The status information includes line number, modem type, dial mode, line state, baud rate, auto connect state, and life class.
Press <ESC> to return
Remote
|NARB-LABTEC
ection
ection

Figure 5-3
Help Window

To view the function key assignments, press the <F1> key a second time. The function key assignments will display as shown in Figure 5-4.

```
LAN To LAN Console  V1.2                Thursday  January 10, 1991  12:47 pm
                          Remote Router MAHB-LABTECH

The function key assignments on your machine are:

ESCAPE          Esc             Back up to the previous level.
EXIT            Alt F10         Exit the program.
CANCEL          F7              Cancel markings or edit changes.
BACKSPACE       Backspace       Delete the character to the left of
                                the cursor.
INSERT          Ins             Insert a new item.
DELETE          Del             Delete an item.
MODIFY          F3              Rename/modify/edit the item.
SELECT          Enter           Accept information entered or select
                                the item.
HELP            F1              Provide on-line help.
MARK            F5              Toggle marking for current item.
CYCLE           Tab             Cycle through menus or screens.
MODE            F9              Change Modes.
UP              Up arrow        Move up one line.
DOWN            Down arrow      Move down one line.
LEFT            Left arrow      Move left one position.
```

Figure 5-4
Help Function Keys Window

Press <Esc> twice to return to the utility.

Viewing the Current Status

To view the current status of the selected connection, select the "Get Status" item in the Options Window. The Status Window shown in Figure 5-5 displays.

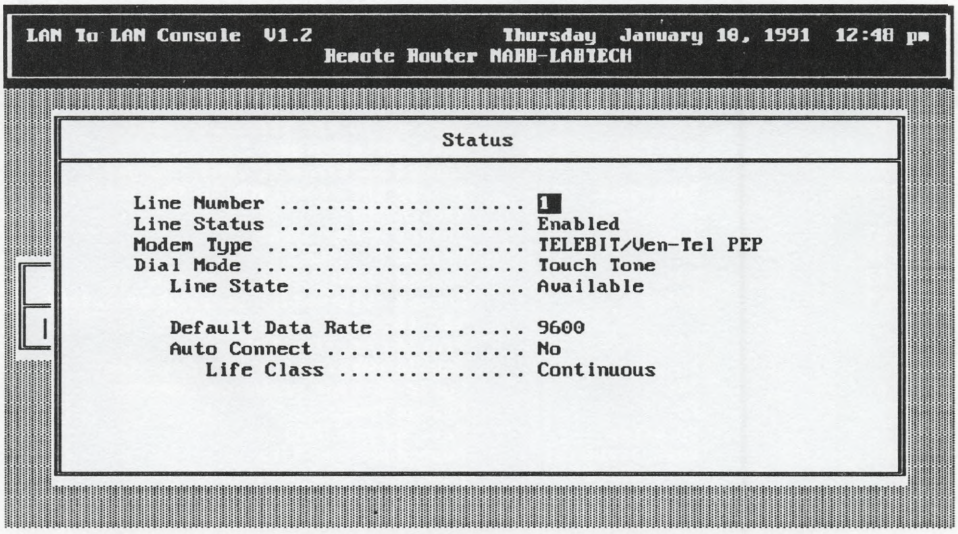

LAN To LAN Console V1.2
Thursday January 10, 1991 12:48 pm
Remote Router MARB-LABTECH
Status
Line Number 1
Line Status ..... Enabled
Modem Type ..... TELEBIT/Ven-Tel PEP
Dial Mode ..... Touch Tone
Line State ..... Available
Default Data Rate 9600
Auto Connect ..... No
Life Class ..... Continuous

Figure 5-5
Status Window

Each of the items displayed in the Status Window is described in the following text. The Status Window cannot be configured.

To view status, proceed as follows

- If you are using a WNIM adapter, you must first select the line number by pressing <Enter>. The Line Number Window displays. Select the line (and press <Enter>).
- If you are using a COM1/COM2 port, the line number is already selected.

The line number you selected displays. The items displayed are associated with the line you selected.

Press <Esc> to exit this window, and you are returned to the Options Window.

Line Number

Indicates the line for which all other items in the Status Window show status. Also indicates if the line is enabled or disabled.

Modem Type

Indicates whether the modem type is "Special Configuration," "Hayes Compatible," or "Telebit Ven-Tel PEP."

Dial Mode

(Not shown.) Indicates whether the dial mode is touch tone or pulse.

Line State

This item indicates the state of the link and whether it is active, available, dialing, waiting, broken, or being reset.

Available - (Available) No connection presently exists.

Resetting - (Being reset) The modem is being reset.

Dialing - (Dialing) The modem is dialing.

Waiting - (Waiting) The line is waiting for a response.

Workstation - (Active) The line is connected to a workstation.

From Router - (Active) Connection was established from router.

To_Router - (Active) Connection was established to router.

Broken - (Broken) The link is not available for a connection.

Other Side ID

Displays only if "Line State" is active (see the preceding description of "Line State"). This item indicates the ID string of the router which is on the other side of the router being viewed.

Default (Connected) Baud Rate

When this item displays as the "Default Baud Rate," the data rate shown is the rate at which the modem was configured in ACONFIG. When this item displays as the "Connected Baud Rate," the data rate shown is the rate at which the modem was connected. The Status Window shows the connected rate when the link is active (refer to the preceding "Line State" item).

"Auto Connect" item

If "Auto Connect" is "Yes," a connection will automatically be established when the system is brought up. If "Auto Connect" is "No," a connection must be established manually as described in the Establishing a Connection to a Router Not in the Dialing Directory section.

Life Class

This item indicates whether the connection is "Continuous" or "Timed." If a connection is timed, the router waits the amount of time specified in "Timed" after the last packet is sent and before breaking the connection.

Life Time - Indicates how much time (set in the "Timed" part of "Life Class") remains before the connection is broken.

Elapsed Time - The "Life Time" that has elapsed.

Remaining Time - The "Life Time" that remains.

The Dialing Directory

The dialing directory contains a list of the routers to which a dialup connection can be made.

You can add, delete, or modify router entries in the dialing directory. You must have supervisor rights to make these changes.

When you initially add a router, the NET$DIAL.DAT file is automatically created. If more than one user wants to run LCONSOLE on the network, this file must be flagged "SRW" (Shareable Read/Write).

Select "Establish Connection" in the Options Window, and the Dialing Directory Window shown in Figure 5-6 displays. This window contains a list of remote routers and the "Manual Entry" item.

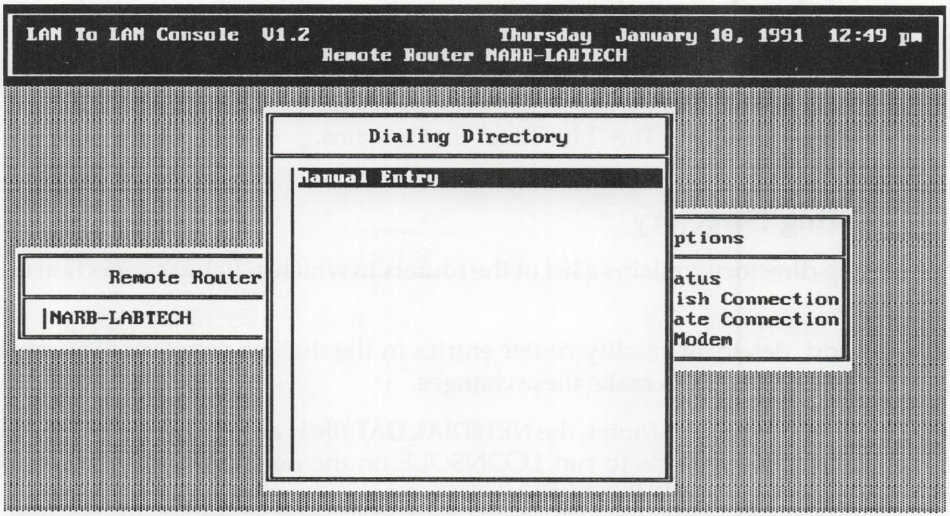


Figure 5-6
Dialing Directory Window

Adding a Router Entry to the Dialing Directory

To add a router entry, press the <Ins> key. The Add Directory Entry Window shown in Figure 5-7 displays.

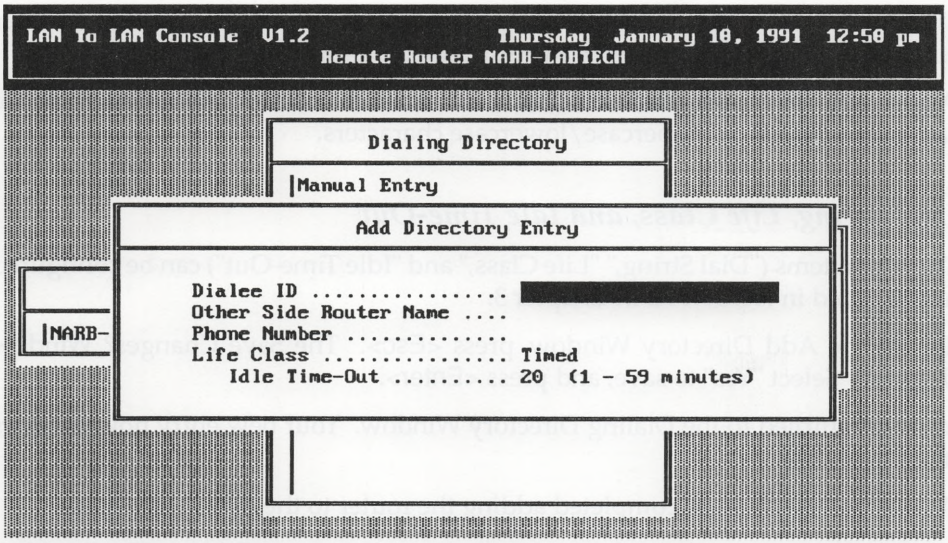


Figure 5-7
Add Directory Entry Window

All items shown in the Add Directory Entry Window apply to the router you are adding to the Dialing Directory.

Dialee ID

The "Dialee ID" item is any string you want to use to describe the location you are calling. Enter this string (your new dialing directory entry name).

Other Side ID String

The "Other Side ID String" item was specified during the remote router configuration in ACONFIG when you specified the "ID String" item.

Again, you must enter here the same characters entered in ACONFIG. Use the same combination of uppercase/lowercase characters.

Dial String, Life Class, and Idle Time-Out

The other items ("Dial String," "Life Class," and "Idle Time-Out") can be configured as described in ACONFIG in Chapter 3.

To exit the Add Directory Window, press <Esc>. The Save Changes? Window displays. Select "Yes" to save, and press <Enter>.

You are returned to the Dialing Directory Window. Your new entry now displays in this window.

At this point, you have completed adding the router to the dialing directory.

To establish a connection, select the new router and press <Enter>. The Establish Connection Window displays. The items in this window reflect the choices you made earlier in the Add Directory Window. You now have an additional opportunity to make changes.

Press <Esc> to exit, and the Establish Connection Window displays. Select "Yes," and press <Enter> to establish the connection.

Deleting a Router Entry from the Dialing Directory

To delete a router entry from the dialing directory, select the router entry you want to delete in the Dialing Directory Window. Press the <Del> key, and the Delete Directory Entry Window shown in Figure 5-8 displays.

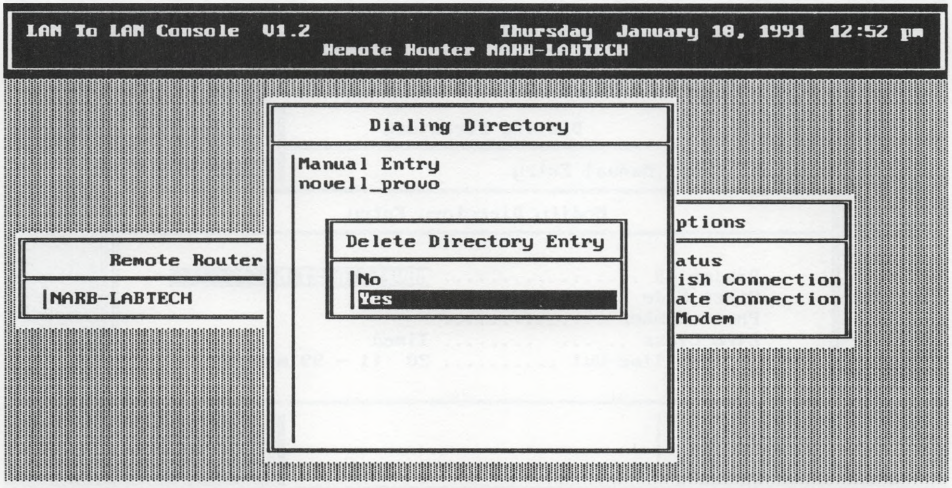


Figure 5-8
Delete Directory Entry Window

Select "Yes." You are returned to the Dialing Directory Window, and the entry you deleted no longer displays.

Changing Router Settings in the Dialing Directory

To modify a router entry in the dialing directory, select the router entry in the Dialing Directory Window that you want to change. Press the <F3> key, and the Modify Directory Entry Window shown in Figure 5-9 displays.

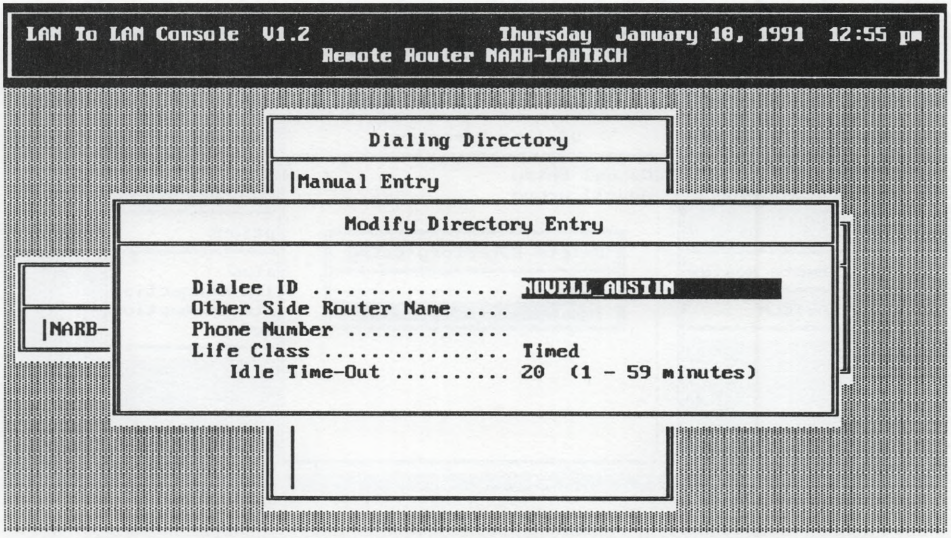


Figure 5-9
Modify Directory Entry Window

Modify this window (see the Adding an Entry subsection for a description of these items). When you complete making changes, press <Esc> to exit. The Save Changes? Window displays. Select "Yes," and press <Enter> to save.

You are returned to the Dialing Directory Window. Your changed entry now displays in this window.

Establishing a Connection to a Router Not in the Dialing Directory

To establish a connection to a router that is not in the dialing directory, select "Establish Connection" in the Options Window. The Dialing Directory Window displays (refer to Figure 5-6), containing a list of routers and the "Manual Entry" item.

Select "Manual Entry," and press <Enter>. The Establish Connection Window shown in Figure 5-10 displays.

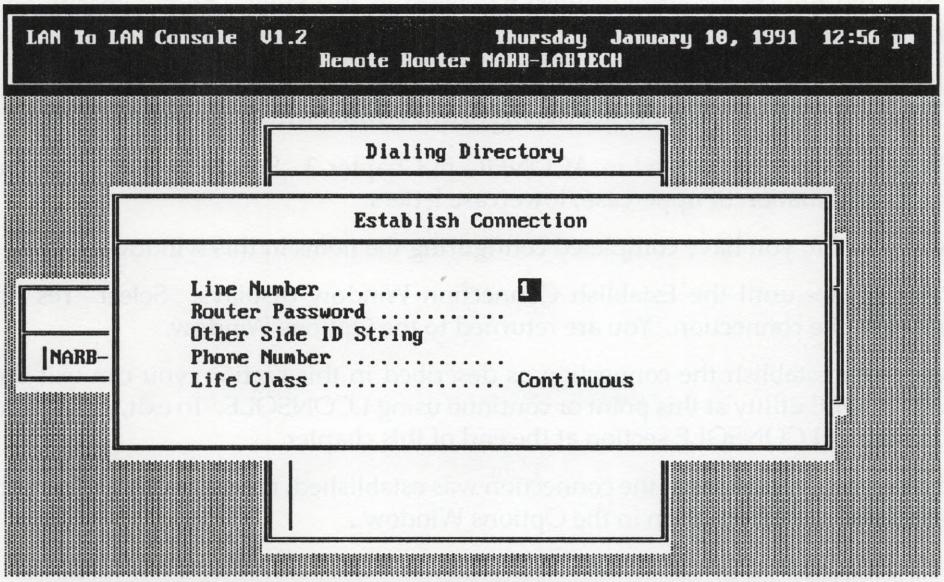


Figure 5-10
Establish Connection Window

Press <Enter>, and the Line Number Window displays (not shown). This window displays if you are using aWNIM adapter.

Line Number

Specifies which line you want to use to form your connection. Select this line.

Router Password

Sets a password for the router to which you are establishing a connection.

If you set a control (router) password in ACONFIG when you specified the "Control Password" item, specify this same password here using the same combination of uppercase/lowercase characters.

If you did **not** set a control (router) password in ACONFIG, do not specify one now.

Other Side ID String, Dial String, Life Class, and Idle Time-Out

These items were specified in ACONFIG in Chapter 3. Specify again, using the same combination of uppercase/lowercase letters.

At this point, you have completed configuring the items in this window.

Press <Esc> until the Establish Connection Window displays. Select "Yes" to establish the connection. You are returned to the Options Window.

After you establish the connection as described in this section, you can exit the LCONSOLE utility at this point or continue using LCONSOLE. To exit, proceed to the Exiting LCONSOLE section at the end of this chapter.

If you want to verify that the connection was established, reenter LCONSOLE and select the"Get Status" item in the Options Window.

Establishing a Connection to a Router in the Dialing Directory

To establish a connection to a router that **is** in the dialing directory, display the Dialing Directory Window as described in the previous section. Select the remote router to which you want a connection established.

The Establish Connection Window displays. Configure the items in this window, and return to the Options Window as described in the previous section.

After you establish the connection as described in this section, you can exit the LCONSOLE utility at this point or continue using LCONSOLE. To exit, proceed to the Exiting LCONSOLE section at the end of this chapter.

If you want to verify that the connection was established, reenter LCONSOLE and select the "Get Status" item in the Options Window.

Terminating a Connection

To terminate a connection, select the "Terminate Connection" item in the Options Window. The Terminate Connection Window shown in Figure 5-11 displays.

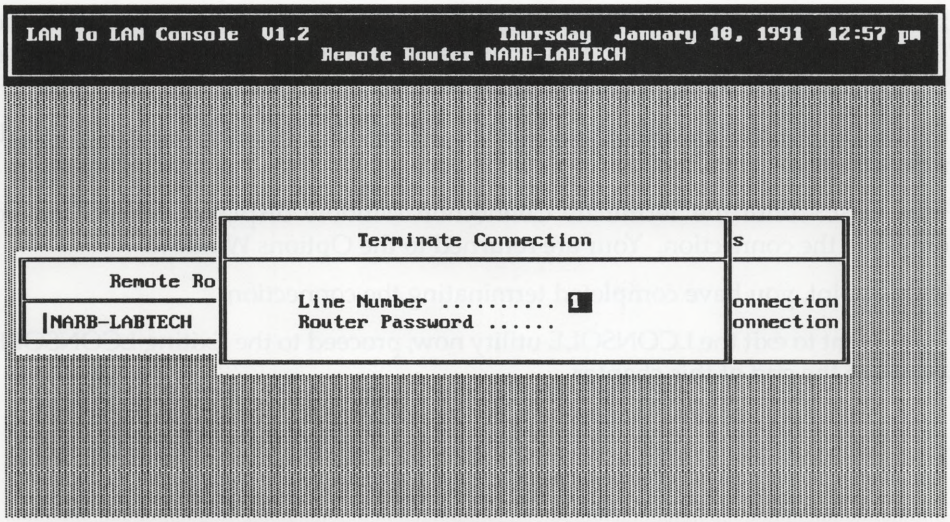


Figure 5-11
Terminate Connection Window

Line Number

Selects the line connection you want to terminate.

Select "Line Number." When you press <Enter>, the Line Number Window displays (not shown).

- If you are using a WNIM adapter, select the line connection you want to terminate.
- If you are using a COM1/COM2 port, press <Enter>.

Router Password

Identifies the password for the router to which a connection is being terminated.

If you set a control (router) password in ACONFIG when you specified the "Control Password" item, specify this same password here using the same combination of uppercase/lowercase characters.

If you did not specify a control password in ACONFIG, do **not** do so now; instead, press <Enter>.

Press <Esc> until the Terminate Connection Window displays. Select "Yes" to terminate the connection. Your are returned to the Options Window.

At this point, you have completed terminating the connection.

If you want to exit the LCONSOLE utility now, proceed to the Exiting LCONSOLE section at the end of this chapter.

Resetting the Modem

Before resetting the modem, note the following

- If the line is connected, you must terminate the connection before resetting the modem.
- If the connection is being established, you must wait until it is either connected or abandoned before resetting the modem.
- If the connection is available or broken, you can proceed to reset the modem.

To reset the modem, select the "Reset Modem" item in the Options Window. The Select Line Window shown in Figure 5-12 displays.

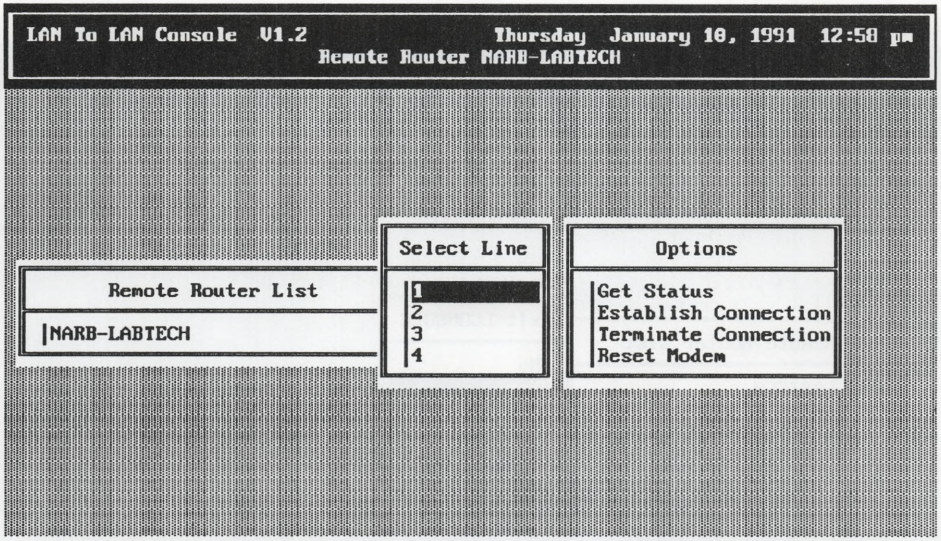


Figure 5-12
Select Line Window

If you are using a WNIM adapter, select the line that connects to the modem you want to reset; if you are using a COM1/COM2 port, the line that connects to the modem is already selected.

Press <Enter> to reset the modem. You are returned to the Options Window. "Reset Modem" is highlighted.

If you want to exit the LCONSOLE utility now, proceed to the Exiting LCONSOLE section at the end of the chapter.

EXITING LCONSOLE

To exit LCONSOLE anytime, press <Esc> until the Exit LCONSOLE Window shown in Figure 5-13 displays. Select "Yes" to return to the DOS prompt "No" to return to the Remote Router List Window (Figure 5-1).

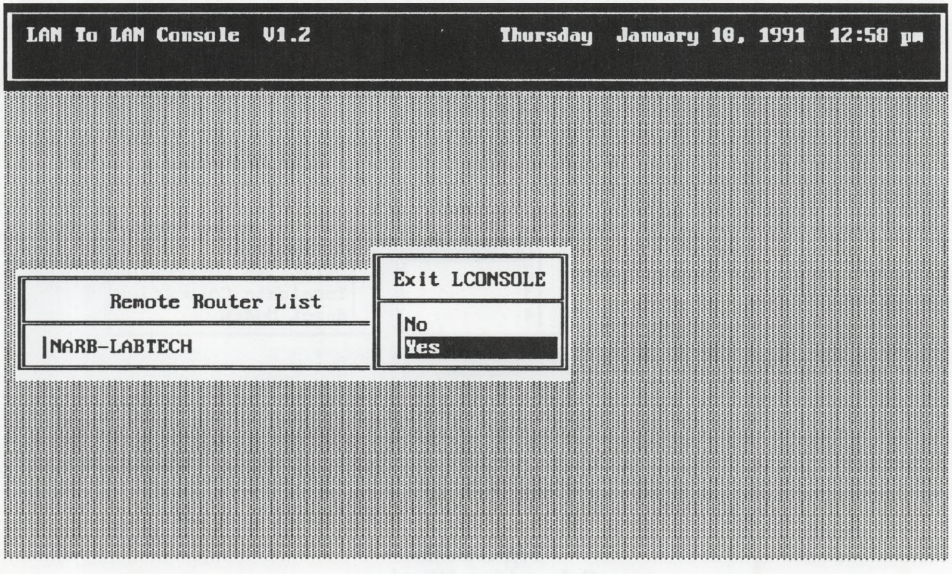


Figure 5-13
Exit LCONSOLE Window

APPENDIX A
TROUBLESHOOTING

This chapter explains a few common problems you may encounter.

Symptom	Diagnosis
Modem resets every 20 minutes	If a LAN-to-LAN connection is not established and you are using a Hayes or compatible modem, the router automatically resets the modem every 20 minutes. The amount of time cannot be configured.
NetWare remote connection stops functioning or functions erratically.	If you attempt to communicate with the COM port (through communication packages, DOS COPY or MODE commands, programming languages, and so on), the NetWare remote connection may stop functioning or may function erratically. To avoid losing data or causing a LAN-to-LAN connection to malfunction, do not write directly to the COM port used by the Async Remote Router. Writing to the COM port sends data down the serial channel from two sources and can change the data rate, cause the modem to hang up, and confuse the router or shell.

APPENDIX B
ERROR MESSAGES

This section lists error messages that might display on your workstation screen when the router is being used, and steps you might take to correct the error. Messages are in alphabetical order.

Abend: ASYNC port could not be found.

The WNIM adapter is not working or configured properly. Check your WNIM adapter configuration, or cable.

Abend: Line could not be initiated.

The memory settings on the board did not match the configuration. Check your WNIM line configuration.

ASYNC Board not available or not working.

This message displays only if you have a COM1/COM2 port. Indicates that the COM1/COM2 port is not working or is not configured properly. Carefully recheck each step in the hardware and software installation.

Could not initialize WNIM board.

Indicates that the WNIM board could not be initialized.

Invalid ID String: Network access denied.

Indicates you did not enter the correct ID string. Check the configurations for the router and the remote workstation shell to make sure the ID strings match. If you have no ID string and get this message it means that the router is picking up static on the line and is trying to make it an ID string, or is getting an unsupported response from the modem following a connection attempt.

The Modem (if it exists) is NOT responding to initialization efforts, or destination is not answering properly.

This message indicates that the NetWare Async Remote Router cannot communicate with the router. Carefully recheck each step in the hardware and software installation.

`The NACSLOAD.BIN could not be found.`

NACSLOAD.BIN was not in the same directory as ROUTER.EXE or NET$OS.EXE.

`Warning: LAN F: died.`

The remote LAN-to-LAN connection was lost.

For a listing of other router and file server error messages and their explanations, refer to the *NetWare System Messages Manual.*

INDEX

$V11.OVL file 2-2, 2-5
80286-based machine 1-4
80386-based machine 1-4

A

Access
  host 1-1
  network 3-13
  router 3-14
ACOMMX.OBJ file 2-1
ACONFIG 1-3, 1-5, 3-7, 3-8, 3-9, 3-10, 3-11, 3-27, 5-20, 5-22
ACONFIG Main Menu 3-11, 3-29
ACONFIG screen 3-10
ACONFIG, highlighted items 3-10
ACONFIG, saving selections 3-10
ACONFIG.EXE file 2-2, 2-5
ACONFIG.HLP file 2-2, 2-5
Add Directory Entry Window 5-15
Add Directory Window 5-16
Address 4-1
Addresses, network 1-5
ALNKWNIM.OBJ file 2-2
Arrow keys 3-10
Asynchronous driver 3-17
"Auto Connect" item 3-24
Auto Connect Window 3-23, 3-24
"Auto ID String" item 3-24

B

BCOMMX.OBJ file 2-1
BLNKWNIM.OBJ file 2-2
Booting 2-5, 3-25, 3-29, 5-3
Buffers, communication 1-5

C

CCOMMX.OBJ file 2-1
CLNKWNIM.OBJ file 2-2
COM1/COM2 port 1-2, 1-3, 1-4, 2-3, 3-19, 3-27, 4-1, 5-10, 5-22, 5-24, B-27
Communication buffers 1-5
COMMX.LAN file 2-1
"Configure a Particular Line" item 3-14
"Configure Router" item 3-12
Configuring, the router 3-9
"Connected Baud Rate" item 5-12
Connection
  automatic 3-26, 5-12
  automatic termination of 3-25
  establishing 5-4, 5-12, 5-16, 5-19, 5-20, 5-23
  manual 5-12
  manual termination of 3-23
  terminating 5-5, 5-21, 5-23
  verifying 5-20, 5-21
Continuous connection 3-25, 5-13
COPY command (DOS) 2-3
Cursor 3-10, 5-5
Custom method (ROUTEGEN) 1-5

D

Data (baud) rate 1-3, 3-18, 3-19, 3-20, 5-12
"Data Rate" item 3-19

Data rate (Telebit) 3-19
Data Rate Window 3-19
DCOMMX.OBJ file 2-1
"Default Baud Rate" item 5-12
Default method (ROUTEGEN) 1-5
<Del> key 5-17
Delete Directory Entry Window 5-17
Dial mode
  pulse 5-11
  touch tone 5-11
"Dial Mode" item 5-11
"Dial String Prefix" item 3-23
"Dialee ID" item 5-16
Dialing Directory
  adding an entry 5-15
  changing an entry 5-18
  deleting an entry 5-17
Dialing directory
  adding an entry 5-13
  changing an entry 5-13
  deleting an entry 5-13
Dialing Directory Window 5-14
Dialup (switched) line 1-4
Direct line 3-25
DISKCOPY command (DOS) 2-2
Diskette
  NetWare Async Remote Router (LAN_DRV_190) 1-3, 1-5
DLNKWNIM.OBJ file 2-2
DOS 1-3, 2-2
Drivers 1-5, 2-1, 2-2, 2-3, 3-10, 3-11, 3-17, 3-27

E

Edit Line Window 3-16, 3-27
Edit Router Window 3-12
Electronic mail 1-1
Enable Line? Window 3-17
ERR$V11.DAT file 2-2, 2-5
"Establish Connection" item 5-14
Establish Connection Window3-14, 5-19, 5-20
Exiting ACONFIG 3-29
Exiting LCONSOLE 5-24

F

<F1> key 5-8, 5-9
<F3> key 5-18
File server 2-5, 3-29
File transfer 1-1
FLAG command (DOS) 3-9
Floppy drive 3-8
Flow Control 3-18
"Flow Control Enabled" item 3-18
Function key assignments 5-9
"Get Status" item 5-10, 5-20

H

Handshaking 3-18
Hardware 1-5
Hardware Flow Control? Window 3-18
Hardware required 1-4
Help (LCONSOLE) 5-4, 5-8
Help Function Keys Window 5-9
Help window 5-8
HELP$V11.DAT file 2-2
Highlighted items (ACONFIG) 3-10
Highlighted items (LCONSOLE) 5-5
Host access 1-1

I

I/O Port 4-1
IBM AT 1-4
IBM compatible 1-4
IBM PC 1-4
IBM PC-DOS 1-3

IBM XT 1-4
IBM$V11.OVL file 2-2, 2-5
ID string 3-13
"ID String" item 3-13, 3-24, 5-16
"Idle Time-Out" item 3-26, 5-16
<Ins> key 5-15
INSTALL 2-1, 2-3, 2-5, 3-11
Installing, WNIM adapter 4-1
Item
    Auto Connect 3-23, 5-12
    Auto ID String 3-23
    Configure a Particular Line 3-16
    Configure Router 3-12
    Connected Baud Rate 5-12
    Data Rate 3-18
    Default Baud Rate 5-12
    Dial Mode 5-11
    Dial String Prefix 3-23
    Dialee ID 5-16
    Establish Connection 5-14
    Flow Control Enabled 3-18
    Get Status 5-10, 5-20
    ID String 3-13, 3-25, 5-16
    Idle Time-Out 3-26, 5-16
    LAN Driver 3-13
    Life Class 3-25, 5-13, 5-16, 5-20
    Line Enabled 3-17
    Line Number 3-16, 5-11, 5-22
    Line State 5-11
    Manual Entry 5-14
    Modem Initialization String 3-22
    Modem Type 3-20, 5-11
    Name of Router Server 3-13
    Number of Lines 3-12
    Other Side ID 5-12
    Other Side ID String 5-16
    Phone Number 3-23
    Phone Type 3-21
    Reset Modem 5-23, 5-24
Item (cont.)
    Router Password 3-14, 5-20, 5-22
    Special Configuration 3-20, 3-21
    Terminate Connection 5-21

L

"LAN Driver" item 3-13
LCONSOLE 1-3, 1-5, 5-3
    accessing 5-6
    exiting 5-24
    functions 5-4, 5-5
    help screens 5-4, 5-8, 5-9
    how to use 5-5
LCONSOLE.EXE file 2-2, 2-5, 5-5
LCONSOLE.HLP file 2-2, 2-5, 5-5
Leased line 1-4, 3-21, 3-25
"Life Class" item 3-25, 5-13, 5-16, 5-20
Life Class Window 3-25
"Line Enabled" item 3-17
Line Number 5-10, 5-11
"Line Number" item 3-16, 5-11, 5-22
Line Number Window 5-10, 5-19, 5-22
Line state
    active 5-11
    available 5-11
    broken 5-11
    dialing 5-11
    from router 5-11
    resetting 5-11
    to router 5-11
    waiting 5-11
    workstation 5-11
Lines
    direct connect 3-25
    enabling/disabling 3-17
    leased 1-4, 3-21, 3-25
List of remote routers 5-6, 5-14, 5-19

M

Main Menu Window 3-10, 3-11
Manual Entry 5-19
"Manual Entry" item 5-14, 5-19
Memory 1-4
Modem
    asynchronous 1-2
    command string 3-23
    data rate 3-19
    Hayes 3-20
    Hayes compatible 3-20
    initialization string 3-22
    resetting 5-5, 5-24
    Telebit 3-22
"Modem Initialization String" item 3-22
Modem type 5-11
"Modem Type" item 3-21, 5-11
Modem Type? Window 3-20
Modems, list of supported 1-4
Modify Directory Entry Window 5-18
Mouse 3-10, 5-5
MSG$V11.DAT file 2-2, 2-5
Multiport access 1-3

N

NACSLOAD.BIN file 2-2, 2-3, 2-5, 5-3, B-28
"Name of Router Server" item 3-13
NET$OS.EXE file 1-5, 2-5, 3-7, 3-9, 3-27, B-28
Network
    access 3-13
    addresses 1-5
"Number of Lines" item 3-12

O

Online help screens 5-4, 5-8
Options Window 5-7
"Other Side ID" item 5-12
"Other Side ID String" item 5-16

P

Password 3-14, 5-20, 5-22
Phone number 3-23
Phone type
    item 3-21
    pulse 3-21
    touch tone 3-21
"Phone Number" item 3-23
Phone Type? Window 3-21
Port 1-3, 1-4, 2-1, 2-3
Private Branch Exchange(PBX) 3-23
Protected mode 1-4

Q

Quitting ACONFIG 3-29

R

Real mode 1-4
Remote Router List Window 5-6, 5-24
"Reset Modem" item 5-23, 5-24
ROUTEGEN 1-5, 2-1, 2-3, 2-4, 3-8, 3-11
ROUTEGEN-2 3-8
ROUTEGEN-3 3-8
Router
    access 3-14
    configuration 3-10
    dedicated 1-5
    external 1-3, 1-4, 1-5, 2-1, 2-2, 2-3, 3-7, 3-8, 3-10, 5-3
    internal 1-3, 1-5, 2-1, 2-2, 2-5, 3-7, 3-9, 3-10, 5-3
    local 1-5
    NetWare 1-5

Router (cont.)
nondedicated 1-5
password 5-22
phone number 3-23
remote 1-5
traditional 1-5
"Router Password" item 3-14
Router (control) password 3-14
ROUTER.EXE file 1-5, 2-3, 3-7, 3-8, B-28
Routers, list of remote 5-19, 5-22
RS-232 1-4
RTS/CTS handshaking 3-18
Rules of Thumb, NetWare Async Remote Router 1-4

S

Satellite transceiver system 3-21
Save Changes? Window 5-16
Save Form? Window 3-28
Saving 3-10, 3-27
Security 3-13
Select LAN Driver Window 3-10
Select Line Window 5-23
SFT NetWare 1-3
Software required 1-3
Software, router 1-5
"Special Configuration" item 3-20, 3-21
SSCOMMX.OBJ file 2-1
Status 5-4, 5-10
Status Window 5-10
Switch settings 4-1
Switched (dialup) line 1-4

T

"Terminate Connection" item 5-21
Terminate Connection Window 3-14, 5-21
The Save Changes? Window 5-18
Timed connection 3-25
Elapsed Time 5-13
Life Time 5-13
Remaining Time 5-13

W

WNIM adapter 1-2, 1-3, 1-4, 2-3, 3-14, 3-19, 3-27, 4-1, 5-3, 5-10, 5-19, 5-22, 5-24, B-27
installation of 4-1
WNIM.LAN file 2-1
Workstation 5-4

Reader Comments

How are we doing?

We at Novell would like to know your assessment of our documentation, including your suggestions for improving it. Please write your comments below and return them to us at the following address, or fax number.

Novell, Inc.
CPD Technical Publications
890 Ross Drive
Sunnyvale, CA 94089
Fax: (408) 747-4361

Product Name: NetWare Async Remote Router
Manual Title: *NetWare Async Remote Router Administration Guide*
2nd Edition (March 1991)
Novell Part Number 100-000690-002

Your name and title: _____
Company: _____
Address: _____
City, State, Zip: _____
Country: _____
Phone number: _____

What information, if any, do you need that was not in the manual?

What topics or procedures, if any, do you feel are not explained in enough detail? Is there anything that was not explained well? Is there anything technically inaccurate? (Refer to the page number in question.)

In what ways can this manual be improved?

NOVELL, INC.

122 EAST
1700 SOUTH

PROVO, UTAH
84606

(801) 429-7000
(800) 453-1267

MADE IN
U.S.A.

100-000690-002

NOVELL®